S. Hrg. 101-379

NATIONAL NUTRITION MONITORING AND RELATED RESEARCH ACT OF 1989

HEARING

BEFORE THE

COMMITTEE ON GOVERNMENTAL AFFAIRS UNITED STATES SENATE

ONE HUNDRED FIRST CONGRESS

FIRST SESSION

ON

S. 253

TO ESTABLISH A COORDINATED NATIONAL NUTRITION MONITORING AND RELATED RESEARCH PROGRAM, AND A COMPREHENSIVE PLAN FOR THE ASSESSMENT OF THE NUTRITIONAL AND DIETARY STATUS OF THE UNITED STATES POPULATION AND THE NUTRITIONAL QUALITY OF FOOD CONSUMED IN THE UNITED STATES, WITH THE PROVISION FOR THE CONDUCT OF SCIENTIFIC RESEARCH AND DEVELOPMENT IN SUPPORT OF SUCH PROGRAM AND PLAN

JUNE 23, 1989

Printed for the use of the Committee on Governmental Affairs

U.S. GOVERNMENT PRINTING OFFICE
22-941 WASHINGTON : 1990

For sale by the Superintendent of Documents, Congressional Sales Office
U.S. Government Printing Office, Washington, DC 20402

S401-6.

COMMITTEE ON GOVERNMENTAL AFFAIRS

JOHN GLENN, Ohio, *Chairman*

SAM NUNN, Georgia	WILLIAM V. ROTH, Jr., Delaware
CARL LEVIN, Michigan	TED STEVENS, Alaska
JIM SASSER, Tennessee	WILLIAM S. COHEN, Maine
DAVID PRYOR, Arkansas	WARREN B. RUDMAN, New Hampshire
JEFF BINGAMAN, New Mexico	JOHN HEINZ, Pennsylvania
HERBERT KOHL, Wisconsin	PETE WILSON, California
JOSEPH I. LIEBERMAN, Connecticut	

Leonard Weiss, *Staff Director*
Eileen Choffnes, *Staff Scientist*
Jo Anne Barnhart, *Minority Staff Director*
Michal Sue Prosser, *Chief Clerk*

CONTENTS

Opening statements: Page
Senator Bingaman 1
Senator Heinz 19

WITNESSES

FRIDAY, JUNE 23, 1989

Hon. George E. Brown, Jr., a Representative in Congress from the State of California 5
James T. Heimbach, Ph.D., Acting Administrator, Human Nutrition Information Service, U.S. Department of Agriculture 9
J. Michael McGinnis, M.D., Deputy Assistant Secretary for Health, Disease Prevention, and Health Promotion, Department of Health and Human Services 12
Sushma Palmer, Ph.D., Director, Food and Nutrition Board, National Academy of Sciences 23
J. Burton Eller, Jr., senior vice president, Government Affairs, National Cattlemen's Association 27
Darlene A. Dougherty, president, the American Dietetic Association 29

ALPHABETICAL LIST OF WITNESSES

Brown, Hon. George E., Jr.:
Testimony 5
Prepared statement 59
Dougherty, Darlene A.:
Testimony 29
Prepared statement 113
Eller, J. Burton, Jr.:
Testimony 27
Prepared statement 109
Heimbach, James T.:
Testimony 9
Prepared statement (with attachments) 67
McGinnis, J. Michael, M.D.:
Testimony 12
Prepared statement 90
Palmer, Sushma, Ph.D.:
Testimony 25
Prepared statement 104

APPENDIX

Text of S. 253 33
Prepared statements of witnesses in order of appearance 59
Statements of:
Senators Leahy and Boschwitz 122
Representative Sherwood Boehlert 126
Letter to Chairman Glenn from Carol T. Crawford, Assistant Attorney General, U.S. Department of Justice, July 21, 1989 127
"Diet and Health: Implications for Reducing Chronic Disease Risk," executive summary, National Research Council, 1989 129

Page

"The Human Nutrition Research and Information Management System, Fiscal Year 1987," sixth progress report, Department of Health and Human Services, November 1, 1988 160

NATIONAL NUTRITION MONITORING AND RELATED RESEARCH ACT OF 1989

FRIDAY, JUNE 23, 1989

U.S. SENATE,
COMMITTEE ON GOVERNMENTAL AFFAIRS,
Washington, DC.

The Committee met, pursuant to notice, at 9:33 a.m., in room SD–342, Dirksen Senate Office Building, Hon. Jeff Bingaman, presiding.

Present: Senators Bingaman and Heinz.

OPENING STATEMENT OF SENATOR BINGAMAN

Senator BINGAMAN. Good morning. The hearing will come to order. This is a hearing on S. 253, the National Nutrition Monitoring and Related Research Act of 1989. The issues we will discuss during this hearing are crucial to the health and well-being of all Americans, and I am grateful to the Chairman of the Senate's Committee on Governmental Affairs, Senator Glenn, for sanctioning this hearing. Through his fine leadership, I am confident that we soon will be able to move ahead with this legislation.

This is the second hearing the Governmental Affairs Committee has held on nutrition monitoring legislation. Just as last year's hearing served as a foundation for Senate passage of the bill, I hope that today's hearing will again lay such a foundation.

Today's testimony is important because it will help the members of Congress determine whether a need exists for the type of national nutrition monitoring system that S. 253 would establish.

To make that determination, we need to examine the programs and activities currently underway. Specifically, I am hopeful that today's witnesses will focus on seven components of current nutrition monitoring and dietary guidance programs. These are: the status and results of current surveys; the current budget for various surveys; current methods of research; current program coordination, both between Federal departments and between the Federal Government and the private sector; the interaction between Federal agencies and State and local governments; current data output and the dissemination of useful information to consumers; and, finally, the inclusion of high-risk groups—Hispanics, Native Americans, the poor, and others—in data collection and analysis.

Despite considerable nutrition-related information from various Federal and non-Federal sources, the fact remains that we do not have a comprehensive nutrition monitoring program. The embarrassing result simply is that we do not know the current nutrition-

al status of our citizens. Without knowledge of this fundamental component, how can we develop programs that encourage safer, more nutritious food consumption or deal with diseases that are associated with dietary habits?

I believe that we can lay the groundwork for a truly coordinated national data-gathering program only through a Congressional mandate such as Senate bill 253.

Currently, at least three Federal departments—the Department of Agriculture, the Department of Health and Human Services, and the Department of Commerce—collect data and conduct nutrition research and training. This is accomplished through more than nine Federal agencies and 19 different surveys. Some estimates put the cost of this activity, the total cost, at more than $200 million annually.

Given such disparate data collection, analysis, and reporting, it is no wonder that we need an integrated approach. Last year, the concept of coordination was reiterated in the Surgeon General's 1988 Report on Nutrition and Health, which identified gaps in our knowledge of nutrition and suggested future research and surveillance needs.

To help fill this critical information gap, the report suggested the possible establishment of a nutrition surveillance system which would enhance the monitoring of population and State-specific trends in the occurrence of nutrition-related risk factors and conditions.

Earlier this year, the National Research Council made similar recommendations concerning the need for better nutrition in its comprehensive report, Diet and Health: Implications for Reducing Chronic Disease Risk.

A second deficiency of our nutrition monitoring efforts in the recent past has been the lack of timely data. This issue becomes more critical when one considers that the members of Congress often rely upon this data when deciding whether to vote for or against legislation dealing with health care, food assistance, food and environmental safety, agriculture production, and biomedical research. Throughout the 100th Congress, for example, the decisions we made were based largely on data collected in the 1970's.

The restructuring we contemplate in this bill would ensure the effective use of Federal and State funds. It will help State and local governments develop initiatives to improve monitoring methods and standards. It will stimulate academic, industrial and governmental partnerships. And, most importantly, it will help ensure that the American public receives the most up-to-date and comprehensive guidance possible so that healthful dietary decisions may be made.

With these thoughts in mind, I look forward to a very useful hearing today.

[Senator Bingaman's prepared statement follows:]

PREPARED STATEMENT OF SENATOR BINGAMAN

Good morning, and welcome to today's hearing on S. 253, the National Nutrition Monitoring and Related Research Act of 1989. The issues we will discuss during this hearing are crucial to the health and well-being of all Americans, and I am grateful to the Chairman of the Committee on Governmental Affairs, Senator Glenn, for

sanctioning this hearing. Through his fine leadership, I am confident that we soon will realize our common goal of improving the quality of life for all.

This is the second hearing the Governmental Affairs Committee has held on nutrition monitoring legislation, and just as last year's hearing served as a foundation for overwhelming Senate passage of the bill, I trust today's hearing will again lay such a foundation. I am pleased to chair this hearing in Senator Glenn's absence.

II. BODY: NEED FOR LEGISLATION

Today's testimony is important because it will help the members of Congress determine whether a need exists for the type of national nutrition monitoring system that S. 253 would establish.

A. Witness Focus.—To make this determination, we must examine the programs and activities currently underway. Specifically, I am hopeful that today's witnesses will focus on seven key components of current nutrition and dietary guidance programs:

(1) Status and results of current surveys;

(2) Current budget for the various surveys and programs;

(3) Current methods research;

(4) Current program coordination, both between federal departments and between the federal government and the private sector;

(5) Current interaction between federal agencies and state and local governments;

(6) Current data-output: The dissemination of useable information to consumers; and

(7) Inclusion of high-risk groups (Hispanics, Native Americans, the poor) in data collection and analysis.

B. Current System.—Despite considerable nutrition-related information from various federal and non-federal sources, the fact remains that we do not have a comprehensive nutrition monitoring program. The embarrassing result simply is that we do not know the current nutritional status of our citizens. And without knowledge of this fundamental component, how can we develop programs that encourage safe, more nutritious food consumption nationwide or deal with disease identified with dietary habits?

I believe we can lay the groundwork for a truly coordinated national data-gathering program only through a Congressional mandate, such as S. 253.

Currently, at least three federal departments—the Department of Agriculture, the Department of Health and Human Services, and the Department of Commerce—collect data and conduct nutrition research and training. This is accomplished through more than nine federal agencies and 19 different surveys. Some estimates put the cost of this activity at more than $200 million.

Given such disparate data collection, analysis, and reporting it is no wonder that we need an integrated approach. Indeed, in a 1985 report to the President and Congress, the National Agriculture Research and Extension Users Advisory Board stated that because of poor coordination among the appropriate federal agencies, each agency ignored opportunities "to economize and perhaps make the results more conclusive." More recently, the Hunger Task Force, appointed by former President Reagan, recommended that the USDA and the DHHS coordinate their surveys on a continuous and timely basis.

This concept was reiterated last year in the Surgeon General's Report on Nutrition and Health, which identified gaps in our knowledge of nutrition and suggested future research and surveillance needs. To help fill this critical information gap, the Report suggested the possible establishment of a nutrition surveillance system, which would enhance monitoring of population- and state-specific trends in the occurrence of nutrition-related risk factors and conditions. Finally, in its comprehensive report released this year, Diet and Health: Implications for Reducing Chronic Disease Risk, the National Research Council made similar recommendations concerning the need for better nutrition monitoring in the U.S. The report calls for better methods to monitor and quantify dietary exposures in human populations and for better methods for data analysis from epidemiological studies.

C. Data Timeliness.—A second deficiency of recent nutrition monitoring efforts has been the lack of timely data. This issue becomes more critical when one considers that the Congress often relies on this data when deciding whether to vote for or against health care, food assistance, food and environmental safety, agriculture production, and biomedical research.

Can we make informed decisions without current baseline data on the nutritional and health status of the U.S. population? Can we possibly know whether our cur-

rent policies are having the intended effect, or whether we should be making crucial changes that would be evident if only we had better information?

Throughout the 100th Congress, for example, the decisions we made were based largely on data collected in the 1970s. A more complete understanding of the relationship between diet, nutrition, and health, could have led to increased knowledge and sound fiscal savings.

To realize these worthy objectives, we must streamline the administrative functions of federal nutrition monitoring programs. S. 253 would do this. It would consolidate administrative authority within an Interagency Board that would assist the Secretaries of the Department of Health and Human Services and the Department of Agriculture in the development, management, and implementation of a coordinated program and a comprehensive 10-year plan.

An Advisory Council would be appointed by the President and the Congress to provide scientific and technical advice on the development and implementation of the national nutrition monitoring program.

III. CONCLUSION

This restructuring will ensure the effective use of federal and state funds. It will help develop state and local initiatives to improve monitoring methods and standards. It will stimulate academic, industrial, and governmental partnerships.

And, most importantly, it will help ensure that the American public receives the most up-to-date and comprehensive guidance possible so that healthful dietary decisions may be made.

With these thoughts in mind, I want to thank you all for your attendance, and I look forward to a morning of excellent testimony.

Senator BINGAMAN. Let me make a few announcements before we turn to our first very distinguished witness. Senator Pat Leahy and Senator Rudy Boschwitz are both leaders in the Senate in nutrition and health issues, but neither could be with us today. They have prepared a joint statement of support which is available and which will be printed in its entirety in our hearing record.[1]

Today's hearing record will also remain open for submission of additional comments for two weeks, or until the 7th of July. Anyone wishing to submit written comments may do so by sending them to the Governmental Affairs Committee.

Let me ask our witnesses to briefly summarize their remarks. Obviously, we will include the full written statements in the record, but we have quite a few witnesses and would ask that they keep their oral remarks brief.

Let me also thank a couple of staff people, in particular, Donna Porter, a specialist in life sciences with the Science Policy Research Division of the Congressional Research Service, who has authored two CRS reports on nutrition monitoring legislation and dietary guidance. She has been a great help to us in the last several years and is a recognized expert in the field of nutrition research and monitoring. Ms. Porter has been a real asset to this Committee and to the Congress.

Carrie Billy, on my staff, has worked tirelessly to bring this legislation to completion, and I appreciate that excellent work very much.

We are fortunate to begin the hearing today with a statement by a true leader in this field, Mr. George Brown, Congressman from California, and chairman of the House Science and Technology Committee. Many of you know Mr. Brown to be the longstanding

[1] See p. 122.

leader in Congress' efforts to improve Federal nutrition monitoring.

Congressman Brown, your support and guidance are vital to efforts to improve public health and nutrition, and your tremendous background in nutrition and science is an asset to all of us here in Congress. We are very honored that you are here today to testify; if you would go right ahead, please.

TESTIMONY OF HON. GEORGE E. BROWN, JR., A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA [1]

Mr. BROWN. Thank you very much, Senator. I also want to compliment you on your own dedication to securing action on this important problem, along with your colleagues in the Senate, and I very much appreciate the efforts all of you are making.

I have been involved in this effort to bring some degree of added rationality to our many nutrition monitoring efforts for in excess of 10 years, I guess, and I have reached a state of considerable frustration at the lack of enthusiasm with which the Department of Agriculture and the Department of Health and Human Services respond to these efforts.

The problem, in my opinion—and I don't want to be overly critical of what is a very common bureaucratic tendency—is to resist any efforts to interfere with the turf of those agencies already engaged in nutrition monitoring.

There is an unfortunate tendency to think that what each of these units is doing is important in itself rather than to see it in its true perspective as a part of a national effort to improve the health and welfare of the people of this country.

I am so frustrated at this that I am inclined to see if there isn't some other way in which we can get the attention of the departments by focusing on the lack of accountability, the waste of money that is occurring under the present systems, and it may be that I will need to engage in some effort to demonstrate this over the next few months if we are not able to bring about some progress in this area.

The President vetoed this bill last year, identical to what you have reintroduced, on the basis that it would "create a substantial amount of unnecessary and complex Federal bureaucracy."

To the contrary, this bill did not create a new bureaucracy or mandate a program administrator, as indicated in the veto message. Rather, the bill provided the flexibility to use and to strengthen coordination structures currently in place.

The bill did mandate that HHS and Agriculture be held responsible and accountable for the coordination of nutrition monitoring activities among all Federal agencies—and, as you have indicated, there are many—and for ensuring that expenditures for these activities were used effectively.

I am inclined to feel that that is what they are resisting, to become accountable for the effective expenditure of these monies.

The costly and long-term struggle over lead agency responsibility and jurisdiction over Federal nutrition activities has curtailed the

---

[1] See p. 59 for Congressman Brown's prepared statement.

advancement and dissemination of nutrition knowledge and is one of the major reasons why passage of S. 253 is imperative.

Both S. 253 and the House counterpart, H.R. 677, simply ask that nutrition monitoring and related research be given priority consistent with the importance the results of an effective system could contribute to public health and economic well-being.

The bills only ask that what the last administration, the Reagan administration, did for global change research be done for nutrition monitoring and related research. And I might indicate another program with which we have similar problems, groundwater research, a matter of emerging national priority, has some of the same problems.

And I think in that case they are also doing a better job of creating a coordinating structure and a structure of accountability than they are for nutrition research, and I think it is odd because the total amount spent on groundwater research is probably substantially less than that which is spent on nutrition monitoring research at the present time, and they are not unrelated in their impact upon the national health, I might say.

I am going to skip over quite a bit of this, Mr. Chairman, in the interest of time.

On the issue of interagency coordination, in testimony before both the House Science and Agriculture Committees, previous administration witnesses have repeatedly indicated that progress has been made in inter-agency coordination of nutrition monitoring activities.

The progress, however, appeared to consist of meetings, development of reports, and revisions of plans. The outcome of these actions has resulted in little concrete evidence of progress toward cooperation among agencies and in compatibility of survey designs which is important to both reducing the cost of the surveys and increasing the usefulness of the data.

For example, the 1987 operational plan indicated that final review and clearance processes precluded full acceptance of the proposals of a task force to improve comparability of socio-demographic variables, and that limited progress had been achieved in compatible sampling design.

At hearings before the House Science, Research and Technology Subcommittee last September, both USDA and DHHS witnesses admitted that after 1 year of discussions, they could not come to an agreement on questions to be included in NHANES III regarding food assistance programs and food sufficiency.

The negotiations were left to the Office of Management and Budget when the survey forms were submitted for clearance. The process came within literally days of delaying the beginning of the NHANES III survey. Such a delay would have cost thousands of dollars to retain the survey teams until the issue was resolved.

As you know, the bill which President Reagan vetoed last year was supported by a broad range of food, agriculture, health, and consumer organizations. In addition, numerous recent reports and recommendations address the need for an enhanced national nutrition monitoring system and legislation such as that which you have introduced, Senator.

You have made reference to some of these, but let me just quote them briefly. The July 1988 Surgeon General's Report on Nutrition and Health stated, "Impressive evidence already links nutrition to chronic disease. However, much more information is needed to continue to identify changes in the national diet that will lead to better health for the Nation. Gaps in our knowledge of nutrition suggest further research and surveillance needs."

And among the examples given were—and I was particularly impressed by this in view of my own increasing maturity—"the nutrient and energy requirements of older adults; how nutrient requirements translate into healthful dietary patterns; the development of dietary markers of dietary intake to monitor better the effects of dietary intervention; and the establishment of nutrition surveillance systems that will enhance the monitoring of population-specific and State-specific trends in the occurrence of nutrition-related risk factors and conditions." All of these are deficiencies in the present system.

In March of this year, the National Research Council of the National Academy, in a report entitled Diet and Health: Implications for Reducing Chronic Disease Risk, recommended, "improvement of the methodology for collecting and assessing data on the exposure of humans to foods and dietary constituents that may alter the risk of chronic diseases." That improvement in methodology is a key part of the bill, Senator, which you have introduced, as I am sure you know, and which is not being done at the present time.

The Council also recommended—and the National Research Council represents the elite of the scientific community in this country and its recommendations need to be given great weight, and normally are.

They recommend, "Development of better methods to monitor and quantify dietary exposures in human populations. This includes improvement in food composition data for both nutritive and non-nutritive substances, methods for more frequent and long-term monitoring of dietary intake, and better methods to quantify dietary intake, especially for energy and alcohol. In particular, the methodology of USDA's nationwide food consumption surveys and the National Center for Health Statistics' health and nutrition examination surveys should be improved to permit assessment of the long-term health effects of dietary factors, both nutritive and non-nutritive."

Senator, what you and I are both trying to do is to bring about the improvements that are recommended by the best people in the scientific community. To me, it is becoming increasingly intolerable that this should be resisted by the departments.

As I said earlier, my level of frustration is such that I am looking for ways, you might say, to strike back at this. I know this is not rational, but after 10 years of effort I am inclined to feel that way. I may not be here another 10 years, Senator, and I hate to think that this problem would go unresolved after a generation of effort to have it handled in the best possible way.

One further point. The USDA's own advisory body, the Human Nutrition Board of Scientific Counselors, recently passed several resolutions that relate to this. I will cite Resolution 1, which says, "Resolved that the Board"—this is the Human Nutrition Board—

"urges the Secretary of Agriculture to support legislation that will establish a plan for a national nutrition monitoring; provide a mechanism for interdepartmental coordination; provide for cooperation between the National Nutrition Monitoring System and State systems for nutrition monitoring; and provide a mechanism whereby nutrition guidance for the general population proposed by a Federal agency will be reviewed by the Secretaries of Agriculture and Health and Human Services before its release."

I ask you, Mr. Chairman, why would the Department of Agriculture's own Human Nutrition Board recommend these things if they were already being done, as the Department continues to insist that they are? It is something which passes belief that we would continue to have this kind of a situation.

Mr. Chairman, I look forward to continuing to work with this Committee and with the Executive Branch to ensure the passage of the National Nutrition Monitoring and Related Research Act of 1989 early in this Congress.

I think that we on the House side will be prepared to move with the Senate on this and get the bill to the President in ample time to deal with the situation if this President feels, as President Reagan did, that this is still an infringement upon the bureaucratic rights of the Executive Branch.

Thank you very much, Senator.

Senator BINGAMAN. Thank you very much, Congressman Brown. Let me just ask a question or two before you leave, if I could. It is generally agreed that the problem in getting administration support for this is the Department of Agriculture. Is that right?

Mr. BROWN. I think that is correct, yes.

Senator BINGAMAN. And is it really just a turf problem or is there a lack of enthusiasm in the Department of Agriculture to see these activities performed in a significantly better way than they have been?

Mr. BROWN. Well, Mr. Chairman, I respect very much the many fine people in the Department of Agriculture that are working on nutrition monitoring, dietary intake, and other aspects of this problem.

I am not inclined to conspiratorial theories in this situation. I don't know who to point the finger at. I think it may be almost a reflexive action on the part of a bureaucracy to take a stance that avoids having another outside participant intimately involved with what they consider to be their fundamental activities.

As I indicated earlier, it is my intention to fully explore this, possibly either with an outside investigative report or by more extensive hearings in my own agriculture subcommittee to find out if we can trace the roots of this.

Senator BINGAMAN. Have you talked to the Secretary of Agriculture, Clayton Yeutter, about this problem?

Mr. BROWN. I have not had the opportunity to do so. As you know, he is new in the position and many of his supporting staff are likewise new. I intend to discuss it with him and with the appropriate assistant secretaries and others at a very early date.

Senator BINGAMAN. Well, I did discuss it with him before his confirmation came up on the Senate floor. I told him that I was very concerned that the Department had recommended that the White

House veto the bill last year and that the White House had done so. I said I had hoped that he would look at the bill personally to determine whether he could support what we were trying to do, since I felt that it would be helpful to his Department, as well as to the rest of the Federal Government, in accomplishing our common goals.

He indicated he would. It is obvious from the testimony we are going to hear today that that has either not been done or he has agreed that the Department of Agriculture's testimony a year ago is appropriate again.

But I will make another effort to visit with him, and if you are available at that time, I would be anxious to have your participation.

Mr. BROWN. I would deeply appreciate the opportunity to participate with you, Senator. I want to get the Secretary's attention.

Senator BINGAMAN. Good. Well, thank you again for your leadership on this issue. We appreciate it very much.

Our second panel includes individuals: Jim Heimbach, who is the Acting Administrator of Human Nutrition in the Information Service at the Department of Agriculture; and Mr. Michael McGinnis, with the Office of Health Promotion and Disease Prevention in the Department of Health and Human Services.

Why don't we hear from you in that order; Mr. Heimbach, if you would go ahead, please.

TESTIMONY OF JAMES T. HEIMBACH, PH.D., ACTING ADMINISTRATOR, HUMAN NUTRITION INFORMATION SERVICE, U.S. DEPARTMENT OF AGRICULTURE [1]

Dr. HEIMBACH. Mr. Chairman and members of the Committee, I am James Heimbach, the Acting Administrator of the Human Nutrition Information Service at the Department of Agriculture. I would like to thank you for the opportunity to discuss our nutrition monitoring activities and to comment on S. 253, the National Nutrition Monitoring and Related Research Act of 1989.

I am pleased to join with our fellow nutrition monitoring colleagues at the Department of Health and Human Services to share with you the progress that we are making and our vision for the future of the nutrition monitoring system.

Nearly 2 years ago, we submitted a joint operational plan for the monitoring system for the years 1987 to 1996. This plan describes three broad goals: to achieve a comprehensive system through coordination among the NNMS components, to improve information dissemination and exchange, and to improve the research base for nutrition monitoring.

First, achieving a comprehensive system: Up to now, our major emphasis has been on coordinating USDA's Nationwide Food Consumption Survey with the NHANES survey of DHHS. Much progress has been made. However, we believe the time has come to turn from bilateral coordination efforts to multilateral ones and to

[1] See p. 67 for Dr. Heimbach's prepared statement.

focus upon the entire nutrition monitoring system and all its components.

To facilitate coordination of all monitoring activities, we have established the Interagency Committee for Nutrition Monitoring, the ICNM, chaired by the Assistant Secretary for Health of DHHS and the Assistant Secretary for Food and Consumer Service of USDA.

The ICNM has representatives from each of the USDA and DHHS agencies involved in monitoring activities, as well as representatives from the Department of Defense, the Department of Commerce, the Department of Labor, and the Veterans Administration.

The ICNM has set up working groups to address specific topics, including Federal-State relations, information dissemination and exchange, food composition data, and survey complementarity. A draft of the NNMS directory which describes the various NNMS activities in detail has been completed and should be available late this summer or very early this fall.

The operational plan points out two other important objectives as part of the coordination goal: improved timeliness of reporting of survey data, and coverage of high-risk individuals.

We have designed the Continuing Survey of Food Intakes by Individuals, the CSFII, with these goals in mind. This survey is designed to include specific high-risk groups. In 1985–86, it focused on women 19 to 50 years of age and their children 1 to 5 years of age. It included a separate low-income sample. Other high-risk groups—the elderly, Native Americans—can be targeted as funds are made available.

The first results of the 1985 CSFII were released only 6 months after data collection was completed, and we have now completed the release of all of the reports and data tapes from both the 1985 and 1986 surveys.

The CSFII was reinstated on April 1st of this year. The survey has been redesigned to support moving-average reporting as a cost effective means of providing trend information in a timely manner. It has also been redesigned to include all individuals in both an all-income sample and in a special low-income sample.

This survey, with its yearly data collection and reporting, is both economical and flexible. It maximizes staff productivity and provides a flexible structure into which topical issues and methodological investigations can be incorporated.

Turning to the Nationwide Food Consumption Survey, the NFCS 1987–88 data collection began in April of 1987 and ended late last year. In addition to data on intakes of individuals, the NFCS includes information on the foods used by households and the cost of those foods.

Data from this survey form the research basis for a new revision of the Thrifty Food Plan, which is, in turn, the basis for the Food Stamp Program allotments. In addition, the new data will be used immediately by the Food and Drug Administration for its total diet study and by the Environmental Protection Agency and the National Academy of Sciences for the purposes of monitoring pesticide residue intakes.

The second goal of the 1987 operational plan is to improve information dissemination. The departments have implemented a re-

porting system that integrates the results of the monitoring system components into common reports. The first report to Congress on the nutritional status of the population was made in 1986 by a Federal advisory committee jointly sponsored by USDA and DHHS.

A second report will include an update on the dietary and nutritional status of the U.S. population and should be available at the end of this summer or beginning of this fall.

A final goal of the operating plan is to improve the research data base for nutrition monitoring. We and the nutrient composition laboratory at the Agricultural Research Service have a well-established system of priority-setting with respect to food composition data. Such data are an essential part of the nutrition monitoring system.

Progress in relation to long-term plans for updating our composition data, as reflected in Agricultural Handbook Number 8, "Composition of Foods," continues. To date, 18 of the 22 sections of this book have been published. The remaining sections are expected to be completed by 1990, with revisions of already published volumes already underway.

With the increased interest in fiber in the diet, as an example of methodological research, we have initiated an international collaborative research project on dietary fiber analysis. We are working with laboratories in the United Kingdom, Canada, and across the United States to analyze 50 U.S. foods by the Association of Official Analytical Chemists method and three other procedures.

We also work with universities and other groups to answer specific research questions. We have undertaken 13 major methodological studies in the past 12 years designed to increase the validity and reliability of survey results while minimizing costs.

It should be clear from these activities that the Department has a serious commitment to the nutrition monitoring system and is working diligently to improve the system in feasible and cost effective ways.

However, there are a number of specific provisions in S. 253 which we cannot support. The requirement for the advisory board and the preparation of an annual report by the council, in addition to biennial reports from the secretaries, we feel would place significant burdens on those agencies responsible for collecting and analyzing the monitoring data.

We believe the requirements of this legislation would generate significant increases in expenditures. At the same time, in 6 of the last 7 years Congress has failed to appropriate the President's budget request for my agency.

S. 253 also addresses the issue of dietary guidance. We have taken seriously the direction of the Appropriations Committee of the House to encourage the Federal Government to speak with one voice when issuing dietary guidance.

To aid in this effort, a Dietary Guidance Working Group was formed within the Department at the beginning of 1986. This group reviews all guidance from USDA that is going to the general public to ensure its consistency with the Dietary Guidelines for Americans. DHHS provides a liaison member to the USDA working group, and we send a liaison representative to their Subcommittee on Dietary Guidance.

A Federal advisory committee has been jointly established by the two departments to examine the 1985 edition of the Dietary Guidelines, in light of new scientific evidence, to determine if a change in any of the guidelines is necessary. This committee held their first meeting in early April of this year.

The administration, while opposing S. 253, continues to support our monitoring goals, which are consistent with those of the proposed legislation. The administration believes that H.R. 1608, if amended to incorporate certain changes, the most notable being the removal of the bill's veto arrangement on the issuance of dietary guidelines, is in line with our mutual goals and is significantly less costly.

Mr. Chairman, that concludes my formal remarks. Thank you again for giving me the opportunity to speak with you today, and I will be happy to respond to your questions.

Senator BINGAMAN. Before we go to any questions, let me call on Dr. McGinnis to make any comments that he would like to.

TESTIMONY OF J. MICHAEL McGINNIS, M.D., DEPUTY ASSISTANT SECRETARY FOR HEALTH, DISEASE PREVENTION AND HEALTH PROMOTION, U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES [1]

Dr. MCGINNIS. Thank you, Mr. Chairman, for inviting the testimony of the Department of Health and Human Services at what we feel is a very important hearing on the subject of nutrition monitoring. I am very pleased to represent Secretary Sullivan and DHHS in my capacity as chairman of the DHHS Nutrition Policy Board.

With me today are Dr. Cathy Woteki from the Centers for Disease Control and the National Center for Health Statistics, Dr. Darla Danford from the National Institutes of Health, Ms. Marilyn Stephenson from the Food and Drug Administration, and Dr. Linda Meyers from the Office of Disease Prevention and Health Promotion, who will all be available to answer questions along with me later if you have them.

Per your request, I will submit my formal testimony for the record and speak less formally, if I may, giving emphasis to certain key points.

Senator BINGAMAN. Please do.

Dr. MCGINNIS. Thank you. The points I would like to emphasize are three, related to the importance of nutrition for health status, the role of nutrition monitoring as a key element of our efforts, and the steps we are taking now to improve those efforts overall.

With respect to the first point, I think it is fair to say that at no time have we had a greater appreciation, based on solid scientific evidence, of the importance of dietary patterns to human experience with respect to health and disease.

As both you and Congressman Brown have pointed out, Mr. Chairman, in less than a 12-month period, two reports of really unprecedented breadth and depth, the Surgeon General's Report on Nutrition and Health, and the National Research Council's Report

[1] See p. 90 for Dr. McGinnis' prepared statement.

on Diet and Health, have come to essentially the same conclusions about the strength of diet's contribution to health status—in particular, to the occurrence of 5 of the 10 leading causes of death for Americans.

As a representative of the Public Health Service, I would like to summarize very briefly the conclusions in that respect of the Surgeon General's Report. On the first page of that report, if I can paraphrase, the observation is made that for the two out of three Americans who do not smoke and do not drink excessively, one personal choice seems to influence long-term health prospects more than any other and that is what we eat.

In addition, the report points out that there is a convergence of recommendations from the perspective of several chronic diseases; that is, similar dietary patterns affect risk for several chronic diseases.

And I think the third major conclusion that might be identified as clearly emerging as the primary priority for dietary change is the recommendation to reduce total intake of fats, especially saturated fats, because of their relationship to the occurrence of several important chronic disease conditions. In sum, we have a very powerful motivation to strengthen our nutritional monitoring efforts, and nutritional efforts in general across the board.

Secondly, better nutrition monitoring is, indeed, a key to our progress in this arena. If we are to accomplish our goals and objectives with respect to nutrition improvement and if we are to deepen our understanding about the ways in which dietary factors affect health status, we must have a solid information base as both a point of departure and as a means of assessing our progress.

That means doing better with respect to the extent to which our surveys reflect actual food consumption patterns, the extent to which they facilitate linkages between dietary patterns and physiologic outcomes, the extent to which the data from survey to survey reinforce each other, the extent to which they afford reliable insights of trends over time, and the extent to which they allow us an understanding of the special problems of certain particularly vulnerable population groups.

Third, we are making progress in the attempt to address some of these issues. My testimony refers to the roughly $40 million devoted to nutrition monitoring through the work of our National Institutes of Health, the Food and Drug Administration, and the Centers for Disease Control and its National Center for Health Statistics.

When I was with you in March of 1988, I summarized some of the steps that had been taken. I would like to briefly bring you up to date on what has happened since then, reinforcing some of the elements that my colleague from USDA has mentioned, beginning with the issue of the establishment in June 1988 of the administration-wide Interagency Committee on Nutrition Monitoring.

I think it is important, as Mr. Heimbach noted, that this committee is made up of 13 departments and agencies and co-chaired by USDA and DHHS, and includes a special focus on some of the key issues that the committee is most concerned about improving with respect to nutrition monitoring. Perhaps greatest among those is

the issue of survey complementarity, and as Mr. Heimbach noted, there is a special subcommittee on that question.

In that regard, I would like to give you some examples of the progress that has been made in survey compatibility. NHANES III will indeed use the USDA food composition data base for estimating dietary intakes. That ought to facilitate comparability substantially.

In addition, statistical reports from the NHANES III and the USDA surveys will be formatted so that readers can make direct comparisons; that is to say, they will use common age groups and demographic characteristics.

And, of course, the rendering in a usable form of the vast array of data points that are made available through these surveys is critical to improvement of our overall monitoring efforts.

In addition, tape documentation has been improved so that researchers can use data from surveys from both departments more easily. The Subcommittee on Survey Complementarity will pursue further progress, I think, with even greater rigor as it gets more into its task.

Secondly, NHANES III has gotten underway, with special sampling of infants, children, the elderly, and minority populations all identified as key areas of concern. NHANES III also includes food security questions to get information on concerns that we as a society have about food access constraints that may not be widespread, but are unacceptable for a society as affluent as ours is.

The Centers for Disease Control has initiated a pilot surveillance activity targeted to the occurrence of severe pediatric under-nutrition. We have initiated a study through the American Institute of Nutrition to develop core indicators to assess the nutritional status of low-income populations.

And on the dietary guidelines front, which is, of course, also a focus of some of the proposals before Congress, I would like to point out that we have initiated as a joint effort of the two departments a Dietary Guidelines Advisory Committee to review the current status of the dietary guidelines and make recommendations, if necessary, for their change.

Although I am pleased to report progress, Mr. Chairman, we are not complacent in our accomplishments. We are eager to improve, appreciate the Committee's interest in this respect, and my colleagues and I will be pleased to answer any questions you may have.

Senator BINGAMAN. Thank you very much.

Mr. Heimbach, let me first just be clear as to where within the Department of Agriculture the responsibility in this area falls. You are the Acting Director—let me just get your title straight—you are the Acting Administrator of the Human Nutrition Information Service?

Dr. HEIMBACH. That is right.

Senator BINGAMAN. Is that within a particular part of the Department of Agriculture?

Dr. HEIMBACH. That is in the Office of Food and Consumer Services.

Senator BINGAMAN. The Office of which?

Dr. HEIMBACH. The Office of Food and Consumer Services.

Senator BINGAMAN. Food and Consumer Services?

Dr. HEIMBACH. Which is headed by the Assistant Secretary for Food and Consumer Services.

Senator BINGAMAN. And who is that?

Dr. HEIMBACH. That person has not been named yet in the current administration.

Senator BINGAMAN. I see, okay.

Dr. HEIMBACH. We have an Acting Assistant Secretary, Ann Chadwick, who had previously been the Director of the Office of the Consumer Adviser in the Reagan administration.

Senator BINGAMAN. Okay. Now, going up from that is the next person, the deputy secretary. Do you have a deputy secretary?

Dr. HEIMBACH. That is right, the Deputy Secretary, Jack Parnell.

Senator BINGAMAN. And that position has been filled?

Dr. HEIMBACH. That has been filled and confirmed.

Senator BINGAMAN. Okay. With regard to your major survey, the CSFII, that stands for——

Dr. HEIMBACH. The Continuing Survey of Food Intakes by Individuals.

Senator BINGAMAN. Okay.

Dr. HEIMBACH. It is probably easier to refer to it as the Continuing Survey. That is an awkward acronym.

Senator BINGAMAN. Okay. Could you explain to me a little bit about the sampling groups, by sex and by age, that are used in the Continuing Survey, say, in 1985 and 1986 and the period we are going into now?

Dr. HEIMBACH. The 1985–86 Continuing Survey focused upon women 19 to 50 years of age and their children 1 to 5 years of age in both an all-income sample and a low-income sample. In 1985, there was also a sample of men 19 to 50 years of age. Those groups were selected as being primarily at nutritional risk for some of the factors that were of particular concern at that time.

The survey has been redesigned. As re-implemented in 1989, it includes all individuals in the household. The sample is 1,500 households in the all-income sample, with an additional sample of 750 low-income households, low-income households being defined as those at or below 130 percent of poverty. The survey then, as I said, includes all individuals in those households, whatever age, whatever sex.

Senator BINGAMAN. We now have a redesigned survey which really has a different sample group than the ones in 1985 and 1986, as I understand it.

Dr. HEIMBACH. That is right.

Senator BINGAMAN. By changing the sample groups, don't you interfere with your ability to develop meaningful information over a period of years? I mean, I had thought that one of the ideas of surveying was that you picked a sample group and you went to that sample group year after year after year and developed knowledge about how those habits or patterns are changing over time. Is that something that you are doing?

Dr. HEIMBACH. I think you are right, Senator. That is a very important aspect of survey research, and I would argue that we are doing that. We are not excluding any groups that were sampled in 1985–86. Rather, we have added more groups to those.

We don't feel that that is an inappropriate thing to do. We do not feel it would be appropriate to limit ourselves to groups that were established at some time in the past and fail to add more groups of concern in the future.

For example, elderly Americans is a group that was not particularly emphasized a number of years ago.

Senator BINGAMAN. You said in 1985, you sampled women and children. That was the focus?

Dr. HEIMBACH. That is right.

Senator BINGAMAN. Is the information you are going to gather about women and children in the future comparable so that you can make judgments about the changes that have occurred within those sample groups?

Dr. HEIMBACH. Yes, it is, Senator.

Senator BINGAMAN. So you are asking the same questions of the same people, or the same types of people?

Dr. HEIMBACH. That is right. We are asking the same questions to the same people.

Senator BINGAMAN. But you are adding to it?

Dr. HEIMBACH. But we are also including men, we are also including older individuals, and we are also including people between the ages of 5 and 19 that were not included before.

Senator BINGAMAN. Now, you, as I understand it, have not taken a national sample. The National Academy of Sciences Report on Nutrition Monitoring recommended that you take a national sample, but my information is that you have not done so. Is that right, or am I misinformed?

Dr. HEIMBACH. You are not misinformed, but that is dated information. It also is a matter of what you define as a national sample.

Senator BINGAMAN. Well, what was the date of that?

Dr. HEIMBACH. Let me explain. The 1985-86 Continuing Survey was a national sample, but it was not of the entire population—that is what they meant—in that it excluded men from the 1986 survey and excluded some of the age groups. The 1987-88 Nationwide Food Consumption Survey is a nationwide sample of all population groups. So we have a sample, yes.

Senator BINGAMAN. So your position is that you have complied with their recommendation?

Dr. HEIMBACH. Yes, and the current implementation of the CSFII also is a nationwide sample representing all elements of the population.

Senator BINGAMAN. I am also informed that we have had some problems getting reports out; that this second report evaluating U.S. nutrition monitoring was expected in about 1987. We are now told it is coming later this year. Are you familiar with what I am talking about there?

Dr. HEIMBACH. I would defer to Dr. McGinnis or one of his colleagues. It is a little behind schedule. I don't believe it is that far behind schedule, but I just came on board a year ago.

Senator BINGAMAN. Dr. McGinnis, do you have information on the timeliness or the timing for this report?

Dr. MCGINNIS. Well, in fact, it is consistent with the initial agreement that the reports would be issued on a 3-year basis. The

last report was issued in 1986, so 1989 is an appropriate interval, given what we initially said we would be doing.

Senator BINGAMAN. So it was not expected in 1987?

Dr. MCGINNIS. It is off the timing from what we had anticipated prior to the release of the first report, but the interval, I believe, is what was expected at the outset of the project.

Senator BINGAMAN. Mr. Heimbach, let me ask you, on the creation of this advisory council, you say in your written statement that the Department of Justice has given the advice that by creating an advisory council we interfere with the separation of powers between the Legislative and the Executive Branches. Is that right?

Dr. HEIMBACH. That is what I am informed the Department of Justice opinion is. My knowledge is strictly at the high school civics level, I am afraid.

Senator BINGAMAN. If that is true, if we are violating separation of powers by setting up advisory councils, we do a lot of that around here. I mean, that is just new information to me. I had not realized that there was a separation of powers problem with setting up advisory councils.

Do you have any kind of written statement from the Department of Justice, a written opinion from them to that effect?

Dr. HEIMBACH. I don't, personally. I do not know whether the Department does or not.

Senator BINGAMAN. Could you check that out?

Dr. HEIMBACH. I can.

Senator BINGAMAN. And if there is a written statement from the Department of Justice on that subject, I think that would be very interesting.[1]

Now, could you describe to me how the advisory council envisioned in the bill that we are considering today—how it would differ from the Department of Agriculture Board of Scientific Advisers that was mandated in 1977 in the Food and Agriculture Act?

Dr. HEIMBACH. I don't know that the issue is so much that it would differ from it as that it would be an additional advisory board, with additional expenses associated.

Senator BINGAMAN. I see. So the problem is that it is duplicative. That is your objection?

Dr. HEIMBACH. I believe the administration's objection is primarily based upon the additional costs and the additional burden upon the agencies. However, the Board of Scientific Counselors differs in that all members are appointed by the Secretary and selected for their scientific credentials.

Senator BINGAMAN. What does your agency spend each year on dietary guidance activities?

Dr. HEIMBACH. On dietary guidance consumer education activities?

Senator BINGAMAN. Yes.

Dr. HEIMBACH. Approximately $200,000 in education research contracts.

Senator BINGAMAN. Two hundred thousand?

---

[1] See p. 127.

Dr. HEIMBACH. That is right, plus about another $1,000,000 in staff expenses and printing costs.

Senator BINGAMAN. How does that compare with what is spent in the Department of Health and Human Services?

Dr. HEIMBACH. It is considerably smaller. I couldn't give you a figure estimate. Perhaps Dr. McGinnis can help you there.

Senator BINGAMAN. How does that square with the position that you take, and that your agency takes that you are the lead agency for dietary guidance?

Dr. HEIMBACH. We have been designated the lead agency to coordinate dietary guidance within the Department, and I emphasize the word "coordinate." The figure I gave you refers——

Senator BINGAMAN. Within the Department or within the Government?

Dr. HEIMBACH. I am referring specifically now to within the Department, but I believe that the Appropriations Committee language did request that HNIS be considered the lead agency within the Federal Government for consumer dietary guidance to the healthy population. Further, the Department of Agriculture was named the lead agency within the Federal Government for the food and agricultural science, including nutrition, by the Food and Agriculture Act of 1977.

I am speaking now only with regard to my agency's role within the Department, and I want to emphasize that our lead agency status refers primarily to coordination of materials. Most of the—or, certainly, many of the agencies within the Department have a consumer education component which includes dietary guidance. The Extension Service and the Food and Nutrition Service particularly have such a role.

Total Department spending would be considerably higher than the $1,200,000 that I have specifically stated.

Senator BINGAMAN. Do you know what that figure is for the Department?

Dr. HEIMBACH. No, I am afraid I don't.

Senator BINGAMAN. Could you get us that information?

Dr. HEIMBACH. All right, yes, I can do that.

Senator BINGAMAN. I think that would be very useful.

[The information of Dr. Heimbach follows:]

According to the "1988 Report to Congress on USDA Human Nutrition Research and Education Activities," total Department spending on Human Nutrition Education and Information in 1988 was $142,300,000. This spending was distributed as follows:

Extension service	$75,000,000
Food and nutrition services	65,500,000
Human nutrition information service	1,200,000
National agricultural library	500,000
Food safety and inspection service	100,000

Senator BINGAMAN. I will have a few other questions, but let me defer to Senator Heinz, who has come in, if he has questions for either witness.

Senator HEINZ. Mr. Chairman, I have a statement that I will not read but ask that it be inserted into the record.

Senator BINGAMAN. So ordered.

[Senator Heinz' prepared statement follows:]

STATEMENT OF SENATOR HEINZ

Mr. Chairman, I want to commend you for convening this hearing on the "National Nutrition Monitoring and Related Research Act of 1989," S. 253. I am happy to join you and others in cosponsoring this legislation as I did in the 100th Congress.

Nutrition plays a leading role in good health at all ages and I welcome efforts to improve the Nation's knowledge of the importance of diet and nutrition. The sad fact is that too many Americans go without proper nutrition today.

At present, Federal agencies do not share their nutrition data, collect comparable data or publish data on a timely basis. Any Federal agency may issue dietary guidelines without approval by either the Secretary of Health and Human Services or Agriculture and there is no regular publication of Federal dietary guidelines.

Sifting through the hype and hyperbole regarding diets—fiber, oat bran, calcium, vitamin C, fish oils, and low density fats—to find the grains of truth has become a national obsession. With Americans increasingly aware of the key role diet plays in maintaining good health, there is growing need for accurate, consistent information on diet and nutriton. The Federal Government can fill that need but that must include more cooperation between HHS and USDA.

S. 253 fills the absence of a coordinated, accountable nutrition monitoring effort by establshing an interagency board for nutrition monitoring. This board would require HHS and USDA to coordinate their data-collecting efforts.

This legislation does not increase funds for nutrition monitoring. Rather, it makes nutrition monitoring more efficient and requires that research be identified by line items in future agency budgets.

By establishing an interagency board for nutrition monitoring chaired by the Secretaries of USDA and HHS, creating a national nutrition monitoring advisory council, and by having the timely publishing of the "dietary guidelines for Americans" we will improve our knowledge base about the effects of Federal nutrition programs. Ths legislation will ensure that scarce Federal dollars are spent on effective and efficient nutrition policy.

Thank you, Mr. Chairman.

Senator HEINZ. Mr. Chairman, I do have a few questions. Let me just preface the questions, if I might, by commending you on holding these hearings to follow up on your efforts from last year. I supported your efforts last year. I have cosponsored your bill, S. 253, this year, and I commend you on bringing back our witnesses.

I think we all know what an important role nutrition plays in the health and welfare of the American family. Indeed, my interest in this subject goes back a long way. It goes back, as a matter of fact, several generations in my family because my grandfather lobbied very hard here in Congress to pass the first pure food and drug law, and had to take on the rest of the food industry when he did it.

Senator BINGAMAN. Heinz ketchup has been referred to as a vegetable, in fact. [Laughter.]

Senator HEINZ. As a matter of fact, funny you should mention that. I happened to be on the Senate floor about the time the Department of Agriculture—I do not know if anybody here wants to take credit for this—proposed revised food stamp regulations that were about to classify not just ketchup, Mr. Chairman, but relish as vegetables.

I had the opportunity to rise on the Senate floor and set the record straight. They are very good things, mind you, but they are not vegetables. They are condiments, as the Chairman well knows.

In any event, I am here because I do share the Chairman's concern that our data base is not as complete as it ought to be, that the agencies do not share the information the way we think you ought to share it, and also that it seems that individual Federal agencies may go off on their own and issue whatever dietary guidelines they want without coordination.

That certainly has been the case. It may be changing now under the Bush administration, but there is no question that that was the record our hearing established last year.

Let me ask you, in terms of publications, is there, in your judgment, a single publication that pulls all our nutritional information together?

Dr. McGINNIS. That is a little bit difficult to answer. Pardon me. I am not a very good testimony to disease prevention. I am suffering from the residuals of a bronchitis.

If you are referring to nutrition science, prior to your coming in, Senator Heinz, several references were made to two landmark reports which were issued in the last 12 months 'time, one the Surgeon General's Report on Nutrition and Health, and, two, the National Research Council's Report on Diet and Health.

Both of those reports have exhaustive reviews—as I say, unprecedented reviews—of the state of the science, and both are remarkably consistent in the conclusions and recommendations that they come to.

Senator HEINZ. But is there a regular publication that draws it altogether?

Dr. McGINNIS. There is—let me point out two regular publications that can be said to draw these issues together.

Senator HEINZ. I am asking you these questions because, though we are all delighted with the Surgeon General's study, it is a once-in-a-longtime kind of thing, and there are constant developments in nutrition, as we all know.

There is a reasonable appetite for that information layered all the way through, from home economics departments on up through the rare university that teaches nutrition clinically or other wise, and occasionally even tries to interest doctors in taking a course in nutrition, plus all the other people who are involved in feeding people, whether they are commercial producers or people who are engaged in the processing of food.

Is there any regular source of information to all those people?

Dr. McGINNIS. Yes, and, again, one has to answer this question tailored to the targeted audience. There are three regular sources of information: first, the longstanding work of the National Research Council to issue Recommended Dietary Allowances which it issues on a regular basis and, for certain nutrients, makes the recommendations of the National Academy of Sciences.

Senator HEINZ. Now, that is just for certain nutrients?

Dr. McGINNIS. Yes.

Senator HEINZ. Yes.

Dr. McGINNIS. That is correct.

Senator HEINZ. Okay.

Dr. McGINNIS. Secondly, the nutrition——

Senator HEINZ. But if you want to find out something more than that——

Dr. McGINNIS. That is what I am coming to.

Senator HEINZ. Okay.

Dr. McGINNIS. Secondly, we are now about to issue the second of a series of periodic reports which we intend to produce every 3 years into the indefinite future, on the nutritional status of the American population. It covers a wide range of nutrients. Both of

those reports are particularly useful to health professionals who are engaged in developing recommendations, for example, for food service use.

Thirdly, if you are targeting the consumer—and, of course, the consumer is ultimately the one we are all interested in facilitating dietary changes in—we have, since 1980, with the Department of Agriculture, issued Dietary Guidelines for Americans, which summarizes in a very succinct fashion the major principles that we feel are important for the American public to bear in mind as it makes its food choices. That publication was revised in 1985, and we are in the process of reviewing it and possibly revising it again. So, on roughly a periodicity of every 5 years, we are rendering this publication for the public.

Senator HEINZ. What is the role of the FDA's periodic publication called The Nutrition Handbook?

Dr. MCGINNIS. I would like to ask the FDA to answer that directly, if I may, and ask Ms. Marilyn Stevenson if she could——

Ms. STEVENSON. Could you clarify further what you mean by the Nutrition Handbook?

Senator HEINZ. Well, the FDA publishes a book called the Nutrition Handbook, about that thick, and next time I will bring one so you know what you are making.

Dr. MCGINNIS. I think what we would like to do, if we may, Senator Heinz, is——

Senator HEINZ. I think this illustrates the problem. You know, this has been something that the FDA has been putting out for about 20 years, and I think you ought to understand what the purpose of it is, as well as be familiar with it.

Dr. MCGINNIS. With all due respect, I think you haven't properly identified the handbook, and what we would like to do is explore with FDA the precise nature of what it is you may be talking about and discuss it with your staff, and we will submit information for the record on that.

Ms. STEPHENSON. Could I ask if you might be talking about the guidance study?

Senator HEINZ. No. This is a hard-cover book. You just reissued it last year.

Dr. MCGINNIS. We will explore it.

Senator HEINZ. Please. You might want to read it.

Dr. MCGINNIS. Well, I have to say I think we have the key nutrition scientist professionals from the Department here who are very familiar——

Senator HEINZ. Is there anybody in the room who has ever heard of the Nutrition Handbook?

Dr. MCGINNIS. No. I think you are using the wrong name.

Senator HEINZ. Widely read, no doubt. [Laughter.]

Dr. MCGINNIS. You may be referring to the Codex Alimentarius of the World Health Organization, which FDA helps to produce.

Senator HEINZ. No. I am not in error. I know the history of this publication going back about 30 years.

Mr. Chairman, I can see that there is a need for additional knowledge here. In this case, I have to tell the witnesses that it is not me. I just want to say that I am very supportive of your effort, Mr. Chairman, and I hope that we will be able to enact the legisla-

tion, and this time do it with some cooperation from the administration. Thank you.

Senator BINGAMAN. Well, Senator Heinz, thank you for your longstanding support of these efforts. We are going to have to work with people in the administration to get a better level of support than is evident in the testimony we have received today.

Dr. McGinnis, let me just ask a question on one key issue. As I understand it, the proposal in this Senate bill provides for a resolution of differences between the Department of Agriculture and the Department of Health and Human Services with regard to issuance of dietary guidance materials. There is a procedure whereby if there is a disagreement and one agency feels strongly about it, it can go forward despite the disagreement.

Could you describe that? It contradicts or disagrees strongly with the bill which Congressman de la Garza has introduced in the House and which the administration has indicated it supports. Maybe you could describe that difference for us.

Dr. MCGINNIS. Well, the major difference, as I understand it, is that there is, in effect, in the current proposal of H.R. 1608 a single Secretary veto authority over dietary guidance, and we strongly oppose that kind of provision.

We think it is extremely important, in particular, speaking from my vantage point representing the principal nutrition research agencies of the Federal Government, to ensure that the kinds of dietary guidance that those scientific agencies feel are appropriate to issue, and convince our Secretary are appropriate to issue, ought to be able to be issued.

Dr. HEIMBACH. Senator, if you don't mind, I would like to make a comment on that.

Senator BINGAMAN. Dr. Heimbach.

Dr. HEIMBACH. The administration has stated that it will not oppose H.R. 1608, on the condition that several changes are made, one of which is a change to remove that capability for a single-Secretary veto. So it is not exactly accurate to state that the administration supports the bill as it stands now.

Senator BINGAMAN. So the Department of Agriculture position is the same as Dr. McGinnis indicated the Department of Health and Human Services' is on that issue?

Dr. HEIMBACH. That is correct, Senator.

Senator BINGAMAN. Okay. There is also, I understand, the issue of an outside advisory group. That is another difference between the two bills, and my understanding is that the Department of Agriculture has objected to the idea of an outside advisory group, which my bill provides for. Is that correct, Dr. Heimbach?

Dr. HEIMBACH. That is correct. As I understand it, the administration has objected to it, not specifically the Department.

Senator BINGAMAN. The Department does not have a position on it?

Dr. HEIMBACH. President Reagan—yes, the Department opposes it, also. I would point out that President Reagan's veto message last year, of course, expressed an administration position, not merely a Department position.

I appreciate very much the testimony of both of you, and we will stay in close touch with you as we move forward in this. Thank you.

Dr. HEIMBACH. Thank you, Senator.

Dr. MCGINNIS. Thank you.

Senator BINGAMAN. Our next panel consists of Sushma Palmer, who is the Director of the Food and Nutrition Board of the Institute of Medicine at the National Academy of Sciences.

Dr. Palmer, thank you for being here.

TESTIMONY OF SUSHMA PALMER, PH.D., DIRECTOR, FOOD AND NUTRITION BOARD, NATIONAL ACADEMY OF SCIENCES [1]

Dr. PALMER. Good morning, and thank you, Mr. Chairman, for inviting the National Research Council to testify on this very important issue. I would like to briefly refer to the National Research Council's recent Report on Diet and Health, which has been mentioned already, because that will provide the basis for my remarks and comments on nutrition monitoring.

Our report, as you know, concerns the relationship between diet and the leading causes of death and disability in this country, and these include cardiovascular diseases, hypertension, many different kinds of cancer, diabetes, obesity, osteoporosis, and chronic liver diseases.

The major objective of this report, Mr. Chairman, was not only to document the scientific evidence, but also to provide a sound basis for giving advice to the American people about ways to cut down on their risk of these potentially fatal diseases.

So in 1985, the National Research Council appointed a 19-member panel to evaluate the evidence, and this panel spent over 3 years and evaluated more than 6,000 research studies, both studies of human populations and laboratory animals, and also clinical experiments.

We consulted widely with many scientists outside this panel, with Government agencies, and the private sector and consumer groups. And on March 1, we issued a very detailed report which I won't go into, but if I may ask, because my remarks will be brief, that the executive summary of that report be entered into the hearing record.[2]

Senator BINGAMAN. We will be glad to include that.

Dr. PALMER. Thank you. The report arrives at a number of conclusions, but the two overall major conclusions are that diet does indeed influence the risk of several chronic diseases. The evidence is extremely strong for heart disease and hypertension, and somewhat less so for different kinds of cancer.

Diet also plays a very important role in dental caries, in liver disease, obesity, and indirectly in diabetes. But its role in some of the other diseases like osteoporosis, for example, is less well understood.

We also recognize that many chronic diseases in which diet plays a role are also affected by the interaction of diet and genetics, and

[1] See p. 104 for Dr. Palmer's prepared statement.
[2] See p. 129.

we are not able to precisely characterize this interaction, but nevertheless we can say that diet has an important influence. And the recommendations made by our committee, to which I will refer briefly, have the potential for a substantial reduction in the risk of these diseases.

The overall recommendations, of which there are nine, I won't go into in detail, but they will be in the record. Let me simply say that we are generally recommending a dietary pattern which is moderate to low in total and saturated fat, high in complex carbohydrates and fiber, low in salt and added sugars, moderate in protein, especially animal protein.

This means that most Americans have to select leaner meats, trim off excess fat, select low-fat or non-fat dairy products, eat more servings of fruits and vegetables, especially green and yellow vegetables, and more servings of cereals and legumes and other foods which are high in complex carbohydrates.

They also need to use less oil and fat in cooking, avoid fried foods, and eat less sugar. And they need to pay attention to food labels. They need to understand how foods are cooked and processed and what is contained in them.

We attempted, Mr. Chairman, to determine what impact these recommendations might have on the health of the American people, and our strongest and most reliable estimate has to do with heart disease—the impact of reducing fat, especially saturated fat, on heart disease.

And we estimated that following our recommendation to lower fat intake from about 37 to 30 percent of calories in the diet, especially reducing saturated fat, could reduce serum cholesterol in the general population by about 10 percent, which in turn could reduce the risk of heart disease by about 20 percent in the general population. This is a substantial reduction and it only pertains to one of the major recommendations of the report.

Although we were less certain about cancer risk and other diseases, our committee concluded, that there is a potential for a substantial reduction of the risk of these diseases by following these dietary recommendations.

We identified a number of steps to implement these recommendations, especially a good baseline data on eating patterns to enable us to track changes in eating patterns in the population; this is the report's connection with nutrition monitoring.

We pointed out a number of deficiencies in the data base for assessing the association between diet and chronic diseases. The two surveys about which you have heard a great deal this morning, provide a tremendous amount of extremely useful information.

But we noted that neither one of them so far provide longitudinal data, the kind of information that you referred to earlier this morning, where you follow segments of the population or certain groups for a long period of time. To assess the incidence and risk of these diseases, one has to be able to study certain groups for long periods because of the long latency period for several chronic diseases, for example, heart disease and especially certain cancers.

We also pointed out various methodological shortcomings in surveys, in information that is currently collected, and overall, in the design of surveys for nutrition monitoring. For example, some of

the respondents in these surveys may be under treatment for medical conditions, and their inclusion in studies of diet and chronic disease can bias the results.

We also pointed out that certain measurements or methods that are used in these surveys may not necessarily be adequate for studying diet and chronic diseases. For example, dietary intake and biochemical measures which are usually evaluated in the NHANES survey by using certain cut-off points could be inadequate or inappropriate because the cut-off points don't necessarily reflect association with certain disease outcomes. They may be arbitrary cut-off points, both for dietary intake and biochemical measures. So they represent different factors.

Besides insufficient knowledge on diet and chronic diseases, which affects our ability to reach definitive conclusions, methodological shortcomings were the single most important barrier to interpretation of data and derivation of more precise conclusions about the association between diet and chronic diseases.

So we recommended that high priority be given to developing better methods to monitor and quantify dietary exposure in human populations. This would include improvements in the food composition data base for nutritive and especially for non-nutritive substances.

It has been pointed out many times before, Mr. Chairman, that in general, we don't have good methodology for assessing the exposure of the population to additives and contaminants that occur in the food supply.

The methodology of both surveys needs to be improved to permit assessment of long-term health effects, as I have mentioned already, both from exposure to nutritive and non-nutritive substances, and we need better methods for data analysis from these surveys.

Besides in the Diet and Health Report, the Food and Nutrition Board of the National Academy of Sciences has in the past commented several times on these surveys, on their methodology and on the quality of data collected. I will just note that we have pointed out several times that regular monitoring of the food supply is essential.

Monitoring of food intake and health status of the U.S. population and timely analysis and reporting of these data are essential to determining changes in eating patterns, and to our ability to compare how these changes reflect adoption of Dietary Guidelines by the American people, of dietary recommendations in the recent Surgeon General's Report on Nutrition and Health, and of the recommendations in the recent report on diet and health from the National Research Council.

Finally, Mr. Chairman, the Food and Nutrition Board recognizes the desirability of coordinating nutrition monitoring activities at the Federal, State and local levels to assure continuous and timely reporting of data, regular interpretation of these data in the form of an annual or biennial report on the nutritional status of the U.S. population, as well as a mechanism for up-to-date and consistent dietary advice to the public. The Food and Nutrition Board is prepared to assist in conducting and providing evaluations and reports on these matters.

Thank you very much, Mr. Chairman.

Senator BINGAMAN. Thank you very much. Let me ask you how widely the executive summary of your recent report has been distributed.

Dr. PALMER. It has been distributed widely to the extent that it has been publicized both in press conferences and discussions on radio programs and television, and it has also been distributed on demand. I have to admit that because of lack of funds, we have not been able to publish it in large quantities, but we are attempting to do that now.

Senator BINGAMAN. How many have been published to date?

Dr. PALMER. Until today, 4,000 were published, but we have xeroxed and provided photocopies of the summaries in addition to the published ones.

Senator BINGAMAN. You say you have plans to publish a significantly larger number?

Dr. PALMER. Yes, we have plans to publish a much larger number—I would hope somewhere in the range of 20,000 or more. And, of course, if we could obtain additional funds, we would be happy to make several hundred thousand.

Senator BINGAMAN. As I understand your testimony, you indicate that you believe legislation, or some action Government-wide, to bring about coordination is appropriate. If it is true that you think legislation would be appropriate in this area, why is that so? Why not just continue what is going on now?

I gather that there is an operational plan which, to some extent, is moving forward. Why should we interfere with that?

Dr. PALMER. Well, first, Mr. Chairman, let me mention that the National Research Council has not specifically examined the legislation that is proposed. So let me say that my comments on the legislative end would be my personal opinion and professional opinion as a nutritional biochemist.

I think that what the Federal agencies are doing in nutrition monitoring is admirable. Both agencies have done a remarkable job and have improved their nutrition monitoring activities over the last 10 years.

In 1983 and 1984, the National Research Council had proposed in 1983 and 1984 numerous improvements in both the surveys, and some of these improvements have already taken place. We had pointed out deficiencies in sampling techniques. We had pointed out the need for comparability of data collection and data analysis and standards used in both these surveys, and I believe that there is an improvement in that regard. We had also emphasized the need for timely and frequent reporting and inclusion of certain additional dietary measurements in these surveys.

So, first, I think improvement has been made. Nevertheless, as our recent report on Diet and Health points out, there continue to be deficiencies which make it difficult for us to deal with problems that are high priorities as far as the health of the American people goes, that is, the importance of nutrition in maintaining health and reducing the risk of chronic diseases. These are much more important now than preventing deficiency diseases in this country.

So in order to track the incidence of these diseases and their relationship with changes in dietary intake, we believe, I personally

believe, and the National Research Council believes, that further improvements in nutrition monitoring are needed.

To go back to my personal opinion, I think that some of the provisions in your bill are entirely appropriate for accomplishing what needs to be accomplished in these surveys. From that standpoint, legislation that necessitates or requires better coordination of survey data, better representation of certain subgroups of the population in these surveys—and more timely and frequent reporting, can be accomplished through the kind of legislative measure that you have put forth.

I would say that it would be important to complement this legislative measure by appropriations to provide additional funding to the two agencies to accomplish these tasks.

Senator BINGAMAN. Thank you very much for your testimony. We appreciate it, and we will be glad to have this executive summary included in our record.

Dr. PALMER. Thank you very much, Mr. Chairman.

Senator BINGAMAN. Our final panel today includes Burton Eller, who is the Vice President of the National Cattlemen's Association, and Darlene Dougherty, who is President of the American Dietetic Association. Both individuals have been very active in the effort to pass this legislation and I very much appreciate their being here to testify again this morning.

Burton, if you would go ahead and make any comments you have, and then I will call on Darlene to do the same.

TESTIMONY OF J. BURTON ELLER, JR., SENIOR VICE PRESIDENT, GOVERNMENT AFFAIRS, NATIONAL CATTLEMEN'S ASSOCIATION[1]

Mr. ELLER. Thank you, Mr. Chairman. Thank you for the opportunity to testify at our perennial event.

Senator BINGAMAN. Unfortunately, I agree.

Mr. ELLER. I represent not only the cattlemen, but a coalition of producer and general farm groups that I have a list of here, and would be happy to submit that for the record to show who else joins us today in our testimony.

Senator BINGAMAN. We will be glad to include that in the record.

[The information of Mr. Eller follows:]

The American Farm Bureau Federation, the American Meat Institute, National Broiler Council, National Cattlemen's Association, National Milk Producers Federation, and National Pork Producers Council.

Senator BINGAMAN. I was intending to say before I introduced you that you represent 240,000 professional cattlemen throughout the country, and your membership includes individuals, affiliated State associations, and national breeding associations as well.

Go right ahead.

Mr. ELLER. Thank you. We support the nutrition legislation for two basic reasons. First, the legislation would provide for a continuing national nutrition monitoring system. Such a system is needed in order to understand the nutritional health of our Nation. We need to know how we use food and how our food choices are changing. We need to know the nutritional status of the different segments of our society.

[1] See p. 109 for Mr. Eller's prepared statement.

Those of us concerned about food and our Nation's health, including nutrition policymakers in Congress and the Executive Branch, must have accurate and timely information on which to base the policies and the programs. No decision can be any better than its underlying information.

Second, we support the legislation because it would require use by the agencies of accurate nutrition data information. Agencies would be required to work in a coordinated way and to speak with one voice on matters of nutrition and diet advice.

An example we have pointed out for several years of non-coordination took us back to 1984 when the National Cancer Institute, using out-of-date information on the fat content of foods, published a diet advice pamphlet which would have misled the public, in addition to doing livestock producers a grave disservice.

Fortunately, the administration and members of Congress intervened and distribution of the error-filled pamphlet was stopped. Everyone agreed the pamphlet had to be reviewed by the nutrition researchers at USDA from whom the original data came in the first place before any more copies were to be distributed.

Today, we know that many women, in efforts to cut back on fat intake, have indeed reduced their red meat intake. They have not recognized that nutrient-dense red meat supplies a relatively large amount of biologically available iron and other essential nutrients. They may even be borderline or deficient in iron intake.

Computer analyses by USDA suggest that in order to meet essential nutrient requirements while reducing fat, it may be necessary for many women, in particular, to increase, not decrease, their intake of lean meat.

At this point in the record, I must remind Dr. McGinnis that the Food and Agriculture Act of 1977 clearly designated USDA as the lead department in nutrition matters, while Health and Human Services has been given the charge in several major statutes over the years to oversee work on disease.

Relationships between certain diseases and diet have become a major focus of the National Institutes of Health. All of this work should be better coordinated and based on better information, which this proposed legislation would help accomplish.

USDA and HHS jointly produce the Dietary Guidelines for Americans, but except for that effort, there is not a mandated, formal mechanism for coordination, although the two departments that we have heard this morning have worked together more closely recently. And in our testimony we have outlined four major areas where we would like to congratulate them and thank them for beginning to work closely. But, Mr. Chairman, I submit that this new era of cooperation and coordination is, in large part over the last 12 months, due to the threat of this legislation.

Mr. Chairman, the long-term health and welfare of the public and, to a certain extent, the viability of agricultural producers depend on Congress' passage of well-designed nutrition legislation and the departments' and agencies' implementation of such legislation.

Thank you for your attention.

Senator BINGAMAN. Thank you very much for your testimony. Before I ask a question, let me call on Ms. Dougherty for her testimony.

TESTIMONY OF DARLENE A. DOUGHERTY, PRESIDENT, THE AMERICAN DIETETIC ASSOCIATION

Ms. DOUGHERTY. Good morning, Senator Bingaman.

Senator BINGAMAN. Good morning.

Ms. DOUGHERTY. As President of the American Dietetic Association and our 57,000 members nationwide, I would like to thank you for the opportunity to address you today in support of your bill, S. 253.

We have submitted our written testimony for the record,[1] and at this point, so that there won't be so many echoes in the room, would like to summarize that testimony.

Senator BINGAMAN. That would be great.

Ms. DOUGHERTY. The American Dietetic Association is devoted to the promotion of the health and nutritional status of the population. Our membership is made up of dietitians and technicians who develop their practice around the translation of food and nutrition science into dietary guidance and food choices for the public.

We know it is necessary to understand the nutritional status of an individual and of groups to make appropriate recommendations for dietary changes that will promote health and prevent disease. If we don't understand the nutritional status of the population, we can't design programs that provide real solutions to the Nation's public health problems.

Complete, timely data is not available. Therefore, ADA members and members of other groups supporting S. 253—public health, scientific, professional, voluntary, consumer, anti-hunger, elderly, educational, religious, and State and local government groups—cannot provide the best guidance on national nutrition policy.

Twenty years ago at the 1969 White House Conference on Food, Nutrition and Health, the importance of surveying and reporting the nutritional status of Americans was identified. As we have heard today, last year the Surgeon's General Report on Nutrition and Health identified gaps in our knowledge in nutrition related to health and suggested further research and surveillance needs.

In February of this year, the report from the Food and Nutrition Board of the National Research Council, the Diet and Health: Implications for Reducing Chronic Disease Risk, made similar recommendations, again noting the need for better nutrition monitoring in the United States.

ADA has supported the concept of coordinating timely nutrition monitoring for 10 to 12 years, and we have actively supported nutrition monitoring legislation in the last several Congresses.

It is not that we don't have studies, but those studies that currently exist do not cover all segments of the population. They are principally conducted by two different departments, thus not always using the same research data base and not collecting and reporting data under the same time frame.

---

[1] See p. 113.

We are not asking for a system that would cost the country more money. The bill clearly states it does not authorize the appropriation of or require the expenditure of any funds in excess of the amount that would be authorized or expended for the same purposes in the absence of a coordinated program.

We are asking for a system that will coordinate all studies currently being done. A system that will improve and coordinate studies that consider nutritional health status measurements, food consumption measurements, dietary knowledge and attitude assessments, and food supply determinants for all populations and all age groups. A system that will provide for timely reports on the current nutritional and health status of this Nation. A system where study results can be better compared to identify the health and nutritional status of high-risk groups, especially the homeless and the hungry.

We support this system to ensure that the dollars already being spent on monitoring will provide the best results to effect change in the health and nutritional status of our country.

We support the formation of the advisory council under Title II. The departments have argued that this provision would create an unreasonable burden on the Federal Government. However, the departments now use multiple ad hoc expert panels for some monitoring activities. We believe that the advisory council would eliminate overlaps and potential repetition of activities among Federal agencies.

Although the bill establishes a central Federal focus for coordinating, managing and directing monitoring activities, it also provides assistance for States and localities to improve their monitoring efforts. The bill directs the Secretaries and the advisory council to include in their program scientific and technical assistance to State and local governments in maintaining dietary and nutritional status data.

Once we have the data, we will be able to give better dietary guidance and provide education in areas which confuse the public, such as food labeling.

We have worked long and hard with representatives from other public health groups, commodity organizations such as the National Cattlemen's Association here with us today, public interest groups, and Congressional staff in producing the provisions under Title III.

When both the Secretaries of HHS and USDA find dietary guidance to be based upon scientific evidence, the recommendations may be issued promptly. In times of disagreement, we support the public comment period through the Federal Register, believing that the expert input will be beneficial to the reconciliation process.

We had hoped that today's hearing would be covering the implementation of nutrition monitoring systems, not the continued discussion of a need for a system.

The Act we support takes the resources currently used for national nutrition monitoring and directs that they be used in a coordinated and more cost effective manner. Without a comprehensive nutrition monitoring system, we will continue to be faced with the same problems in determining the health and nutritional status of both high-risk and healthy Americans. I hope that S. 253

will be promptly reported from Committee and that the legislation will be acted into law this year.

Thank you for allowing the sharing of the views of the American Dietetic Association.

Senator BINGAMAN. Thank you very much.

Ms. Dougherty, one of the provisions in our bill contemplates a grants program, a program where grants would be made. Could you give your view on the importance of that, whether that is a significant part of what we are trying to accomplish here?

Ms. DOUGHERTY. Well, I certainly think that it is a good section to have. Whether it is significant, I don't know whether I would say that its significance is as great as putting a coordinating system into effect. The grants process, of course, would allow the participation of experts, which would be effective.

Senator BINGAMAN. And, Mr. Eller, based on your statement, I gather you feel that the changes we are trying to bring about here really are not going to happen in the near future if we proceed as we are today, and that legislative action is required in order that we move forward.

Mr. ELLER. We have had, in the last several months to a year, good effort by individuals to move ahead with the coordinating and cooperating phase of bringing the departments' programs and oversights together. People change, departments changes, and focuses and priorities change.

With the mandate by the Appropriations Committee of the House and with this Committee's proposed legislation starting down on the process, the process apparently has considerably improved, and it can break down just as well.

Senator BINGAMAN. So you think that to be sure we lock in the improvements and continue them, we should pass legislation, I gather?

Mr. ELLER. Yes, sir. As we said, an appeal to the President before he vetoed last year that coordination and cooperation and, to some extent, maximizing the use of funds in matters like this is just good government. It is not just good nutrition; it is good government.

Senator BINGAMAN. All right. Well, let me thank you both. I think your testimony and your help in this effort have been crucial to our effort. I want to thank each of the witnesses for their testimony. I especially thank the people in the audience for attending.

I believe that we have achieved some important results, and I believe that based on the record we have made here we can move forward. As we proceed through the rest of this session, I hope that the full Committee will see fit to pass this legislation and send it to the floor, and I hope we can persuade the administration that this is good legislation.

Thank you very much. That will end the hearing.

[Whereupon, at 11:07 a.m., the Committee was adjourned.]

APPENDIX

101ST CONGRESS
1ST SESSION

S. 253

To establish a coordinated National Nutrition Monitoring and Related Research Program, and a comprehensive plan for the assessment of the nutritional and dietary status of the United States population and the nutritional quality of food consumed in the United States, with the provision for the conduct of scientific research and development in support of such program and plan.

IN THE SENATE OF THE UNITED STATES

JANUARY 25 (legislative day, JANUARY 3), 1989

Mr. BINGAMAN (for himself, Mr. LEAHY, Mr. SIMON, Mr. KERRY, Mr. HARKIN, Mr. CONRAD, Mr. BOSCHWITZ, Mr. COHEN, Mr. PELL, Mr. MOYNIHAN, Mr. HEINZ, Mr. BURDICK, Mr. ROCKEFELLER, Mr. CHAFEE, Mr. CRANSTON, and Mr. BRADLEY) introduced the following bill; which was read twice and referred to the Committee on Governmental Affairs

---

A BILL

To establish a coordinated National Nutrition Monitoring and Related Research Program, and a comprehensive plan for the assessment of the nutritional and dietary status of the United States population and the nutritional quality of food consumed in the United States, with the provision for the conduct of scientific research and development in support of such program and plan.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SHORT TITLE

SECTION 1. This Act may be cited as the "National Nutrition Monitoring and Related Research Act of 1989".

PURPOSES

SEC. 2. The purposes of this Act are to—

(1) make more effective use of Federal and State expenditures for nutrition monitoring, and enhance the performance and benefits of current Federal nutrition monitoring and related research activities;

(2) establish and facilitate the timely implementation of a coordinated National Nutrition Monitoring and Related Research Program, and thereby provide a scientific basis for the maintenance and improvement of the nutritional status of the people of the United States and the nutritional quality (including, but not limited to, nutrient and nonnutritive content) of food consumed in the United States;

(3) establish and implement a comprehensive plan for the National Nutrition Monitoring and Related Research Program to assess, on a continuing basis, the dietary and nutritional status of the people of the United States and the trends with respect to such status, the state of the art with respect to nutrition monitoring and related research, future monitoring and related research priorities, and the relevant policy implications;

(4) establish and improve the quality of national nutritional and health status data and related data bases and networks, and stimulate research necessary to develop uniform indicators, standards, methodologies, technologies, and procedures for nutrition monitoring;

(5) establish a central Federal focus for the coordination, management, and direction of Federal nutrition monitoring activities;

(6) establish mechanisms for addressing the nutrition monitoring needs of Federal, State, and local governments, the private sector, scientific and engineering communities, health care professionals, and the public in support of the foregoing purposes; and

(7) provide for the conduct of such scientific research and development as may be necessary or appropriate in support of such purposes.

DEFINITIONS

SEC. 3. As used in this Act—

(1) the term "nutrition monitoring and related research" means the set of activities necessary to provide timely information about the role and status of factors that bear on the contribution that nutrition makes to the health of the people of the United States, including—

(A) dietary, nutritional, and health status measurements;

(B) food consumption measurements;

(C) food composition measurements and nutrient data banks;

(D) dietary knowledge and attitude measurements; and

(E) food supply and demand determinations;

(2) the term "coordinated program" means the National Nutrition Monitoring and Related Research Program established by section 101(a);

(3) the terms "Interagency Board for Nutrition Monitoring and Related Research" and "Board" mean the Federal coordinating body established by section 101(c);

(4) the term "comprehensive plan" means the comprehensive plan prepared under section 103;

(5) the term "Joint Implementation Plan for a Comprehensive National Nutrition Monitoring System" means the plan of that title submitted to Congress in September 1981 by the Department of Agriculture and the Department of Health and Human Services, under section 1428 of the Food and Agriculture Act of 1977 (7 U.S.C. 3178);

(6) the terms "National Nutrition Monitoring Advisory Council" and "Council" mean the advisory body established under section 201;

(7) the term "Secretaries" means the Secretary of Agriculture and the Secretary of Health and Human Services, acting jointly;

(8) the term "local government" means a local general unit of government or local educational unit; and

(9) the term "nutritional quality" means—

(A) the appropriate levels of individual nutrients in the diet;

(B) the appropriate levels between nutrients in the diet;

(C) the bioavailability of nutrients such as absorption, digestion, and utilization; and

(D) the nutritional importance of non-nutrient substances such as fiber, phytate, and such substances that are naturally found in the food supply.

TITLE I—NUTRITION MONITORING AND RELATED RESEARCH

ESTABLISHMENT OF THE COORDINATED PROGRAM

SEC. 101. (a) There is established a ten-year coordinated program, to be known as the National Nutrition Monitor-

ing and Related Research Program, to carry out the purposes of this Act.

(b) The Secretaries shall be responsible for the implementation of the coordinated program.

(c) To assist in implementing the coordinated program, there is established an Interagency Board for Nutrition Monitoring and Related Research, of which an Assistant Secretary in the Department of Agriculture (designated by the Secretary of Agriculture) and an Assistant Secretary in the Department of Health and Human Services (designated by the Secretary of Health and Human Services) shall be joint chairpersons. The remaining membership of the Board shall consist of additional representatives of Federal agencies, as determined appropriate by the joint chairpersons of the Board. The Board shall meet no less often than once every three months for the two-year period following the date of the enactment of this Act, and when appropriate thereafter.

(d) To establish a central focus and coordinator for the coordinated program, the Secretaries may appoint an Administrator of Nutrition Monitoring and Related Research. The Administrator shall—

(1) be an individual who is eminent in the field of nutrition monitoring and related areas, and be selected on the basis of the established record of expertise and distinguished service of such individual; and

(2) administer the coordinated program with the advice and counsel of the joint chairpersons of the Board, serve as the focal point for the coordinated program, and serve as the Executive Secretary for the National Nutrition Monitoring Advisory Council.

FUNCTIONS OF THE SECRETARIES

SEC. 102. (a) The Secretaries, with the advice of the Board, shall—

(1) establish the goals of the coordinated program and identify the activities required to meet such goals, and identify the responsible agencies with respect to the coordinated program;

(2) update the Joint Implementation Plan for a Comprehensive National Nutrition Monitoring System, and integrate it into the coordinated program;

(3) ensure the timely implementation of the coordinated program and the comprehensive plan prepared under section 103;

(4) include in the coordinated program and the comprehensive plan a competitive grants program, in accordance with the provisions of this Act, to encourage and assist the conduct, by Federal and non-Federal entities on an appropriate matching funds basis, of research (including research described in section 103(a)(3)) that will accelerate the development of uniform and cost-effective standards and indicators for the

assessment and monitoring of nutritional and dietary status and for relating food consumption patterns to nutritional and health status;

(5) include in the coordinated program and the comprehensive plan a grants program, in accordance with the provisions of this Act, to encourage and assist State and local governments in developing the capacity to conduct monitoring and surveillance of nutritional status, food consumption, and nutrition knowledge and in using such capacity to enhance nutrition services (including activities described in sections 103(a)(5) and 103(b)(9));

(6) include in the coordinated program each fiscal year an annual interagency budget for each fiscal year of the program;

(7) foster productive interaction, with respect to nutrition monitoring and related research, among Federal efforts, State and local governments, the private sector, scientific communities, health professionals, and the public;

(8) contract with a scientific body, such as the National Academy of Sciences or the Federation of American Societies for Experimental Biology, to interpret available data analyses, and publish every two years, or more frequently if appropriate, a report, on

the dietary, nutritional, and health-related status of the people of the United States and the nutritional quality (including, but not limited to, nutrient and nonnutritive content) of food consumed in the United States; and

(9)(A) foster cost recovery management techniques in the coordinated program; and

(B) impose appropriate charges and fees for publications of the coordinated program, including print and electronic forms of data and analysis, and use the proceeds of such charges and fees for purposes of the coordinated program (except that no such charge or fee imposed on an educational or other nonprofit organization shall exceed the actual costs incurred by the coordinated program in providing the publications involved).

(b) The Secretaries shall submit to the President for transmittal to Congress by January 15 of each alternate year, beginning with January 15 following the date of the enactment of this Act, a biennial report that shall—

(1) evaluate the progress of the coordinated program;

(2) summarize the results of such coordinated program components as are developed under section 103;

(3) describe and evaluate any policy implications of the analytical findings in the scientific reports re-

quired under subsection (a)(8), and future priorities for nutrition monitoring and related research;

(4) include in full the annual reports of the Council provided for in section 202; and

(5) include an executive summary of the report most recently published by the scientific body, as provided for in subsection (a)(8).

DEVELOPMENT OF THE COMPREHENSIVE PLAN FOR THE NATIONAL NUTRITION MONITORING AND RELATED RESEARCH PROGRAM

SEC. 103. (a) The Secretaries, with the advice of the Board, shall prepare and implement a comprehensive plan for the coordinated program which shall be designed to—

(1) assess, collate data with respect to, analyze, and report, on a continuous basis, the dietary and nutritional status of the people of the United States, and the trends with respect to such status (dealing with such status and trends separately in the case of preschool and school-age children, pregnant and lactating women, elderly individuals, low income populations, blacks, Hispanics, and other groups, at the discretion of the Secretaries), the state of the art with respect to nutrition monitoring and related research, future monitoring and related research priorities, and relevant policy implications of findings with respect to such status, trends, and research;

(2) sample representative subsets of identifiable low income populations (such as Native Americans, Hispanics, or the homeless), and assess, analyze, and report, on a continuous basis, for a representative sample of the low income population, food and household expenditures, participation in food assistance programs, and periods experienced when nutrition benefits are not sufficient to provide an adequate diet;

(3) sponsor or conduct research necessary to develop uniform indicators, standards, methodologies, technologies, and procedures for conducting and reporting nutrition monitoring and surveillance;

(4) develop and keep updated a national dietary and nutritional status data bank, a nutrient data bank, and other data resources as required;

(5) assist State and local government agencies in developing procedures and networks for nutrition monitoring and surveillance; and

(6) focus the activities of the Federal agencies.

(b) The comprehensive plan, at a minimum, shall include components to—

(1) maintain and coordinate the National Health and Nutrition Examination Survey (NHANES) and the Nationwide Food Consumption Survey (NFCS);

(2) provide, by 1991, for the continuous collection, processing, and analysis of nutritional and dietary status data through stratified probability samples of the people of the United States designed to permit statistically reliable estimates of high-risk groups and geopolitical or geographic areas, and to permit accelerated data analysis (including annual analysis, as appropriate);

(3) maintain and enhance other Federal nutrition monitoring efforts such as the Centers for Disease Control Nutrition Surveillance Program and the Food and Drug Administration Total Diet Study, and, to the extent possible, coordinate such efforts with the surveys described in paragraphs (1) and (2);

(4) incorporate, in survey design, military and (where appropriate) institutionalized populations;

(5) complete the analysis and interpretation of the data sets from the surveys described in paragraph (1) collected prior to 1984 within the first year of the comprehensive plan;

(6) improve the methodologies and technologies, including those suitable for use by States and localities, available for the assessment of nutritional and dietary status and trends;

(7) develop uniform standards and indicators for the assessment and monitoring of nutritional and dietary status, for relating food consumption patterns to nutritional and health status, and for use in the evaluation of Federal food and nutrition intervention programs;

(8) establish national baseline data and procedures for nutrition monitoring;

(9) provide scientific and technical assistance, training, and consultation to State and local governments for the purpose of—

(A) obtaining dietary and nutrition status data;

(B) developing related data bases; and

(C) promoting the development of regional, State, and local data collection services to become an integral component of a national nutritional status network;

(10) establish mechanisms to identify the needs of users of nutrition monitoring data and to encourage the private sector and the academic community to participate in the development and implementation of the comprehensive plan and contribute relevant data from non-Federal sources to promote the development of a national nutritional status network;

(11) compile an inventory of Federal, State, and nongovernment activities related to nutrition monitoring and related research;

(12) focus on national nutrition monitoring needs while building on the responsibilities and expertise of the individual membership of the Board;

(13) administer the coordinated program, define program objectives, priorities, oversight, responsibilities, and resources, and define the organization and management of the Board and the Council; and

(14) provide a mechanism for periodically evaluating and refining the coordinated program and the comprehensive plan that facilitates cooperation and interaction by State and local governments, the private sector, scientific communities, and health care professionals, and that facilitates coordination with non-Federal activities.

(c) The comprehensive plan shall—

(1) allocate all of the projected functions and activities under the coordinated program among the various Federal agencies and offices that will be involved;

(2) contain an affirmative statement and description of the functions to be performed and activities to be undertaken by each of such agencies and offices in carrying out the coordinated program; and

(3) constitute the basis on which each agency participating in the coordinated program requests authorizations and appropriations for nutrition monitoring and related research during the ten-year period of the program.

(d)(1) Within twelve months after the date of enactment of this Act, the Secretaries shall publish in the Federal Register a proposed comprehensive plan for public review for a comment period of no less than sixty days.

(2) Within sixty days after the comment period under paragraph (1) expires, and after considering any comments received, the Secretaries shall submit to the President, for submission to the Congress and for publication in the Federal Register, the final comprehensive plan.

(e) Nothing in this section may be construed as modifying, or as authorizing the Secretaries or the comprehensive plan to modify, any provision of an appropriation Act (or any other provision of law relating to the use of appropriated funds) that specifies—

(1) the department or agency to which funds are appropriated; or

(2) the obligations of such department or agency with respect to the use of such funds.

IMPLEMENTATION OF THE COMPREHENSIVE PLAN

SEC. 104. (a) The comprehensive plan shall be carried out during the period ending with the close of the ninth fiscal

year following the fiscal year in which the comprehensive plan is submitted in its final form under section 103(d)(2), and shall be—

(1) carried out in accord with, and meet the program objectives specified in, section 103(a) and paragraphs (1) through (11) of section 103(b);

(2) managed in accord wtih paragraphs (12) through (14) of section 103(b);

(3) carried out, by the Federal agencies involved, in accord with the allocation of functions and activities under section 103(c); and

(4) funded by appropriations made to such agencies for each fiscal year of the program.

(b) Nothing in this title may be construed to grant any new regulatory authority or to limit, expand, or otherwise modify any regulatory authority under existing law, or to establish new criteria, standards, or requirements for regulation under existing law.

SCIENTIFIC RESEARCH AND DEVELOPMENT IN SUPPORT OF THE COORDINATED PROGRAM AND COMPREHENSIVE PLAN

SEC. 105. The Secretaries shall coordinate the conduct of, and may contract with the National Science Foundation, the National Aeronautics and Space Administration, the National Oceanic and Atmospheric Administration, the National Institute of Standards and Technology, and other suitable

Federal agencies, for such scientific research and development as may be necessary or appropriate in support of the coordinated program and the comprehensive plan and in furtherance of the purposes and objectives of this Act.

ANNUAL BUDGET SUBMISSION

SEC. 106. (a) The President, at the same time as the submission of the annual budget to the Congress, shall submit a report to the Committees on Agriculture and Science, Space, and Technology of the House of Representatives and to the Committees on Agriculture, Nutrition, and Forestry and Governmental Affairs of the Senate on expenditures required for carrying out the coordinated program and implementing the comprehensive plan. The report shall detail, for each of the agencies that are allocated responsibilities under the coordinated program—

(1) the amounts spent on the coordinated program during the fiscal year most recently ended;

(2) the amounts expected to be spent during the current fiscal year; and

(3) the amounts requested in the annual budget for the fiscal year for which the budget is being submitted.

(b) Nothing in this title is intended to either—

(1) authorize the appropriation or require the expenditure of any funds in excess of the amount of funds

that would be authorized or expended for the same purposes in the absence of the coordinated program; or

(2) limit the authority of any of the participating agencies to request and receive funds for such purposes (for use in the coordinated program) under other laws.

TITLE II—NATIONAL NUTRITION MONITORING ADVISORY COUNCIL

ESTABLISHMENT OF THE COUNCIL

SEC. 201. (a)(1) The President shall establish, within ninety days after the date of the enactment of this Act, a National Nutrition Monitoring Advisory Council. The Council shall assist in carrying out the purposes of this Act, provide scientific and technical advice on the development and implementation of the coordinated program and comprehensive plan, and serve in an advisory capacity to the Secretaries.

(2) The Council shall consist of nine voting members, of whom—

(A) five members shall be appointed by the President; and

(B) four members shall be appointed by Congress, of whom—

(i) one shall be appointed by the Speaker of the House of Representatives;

(ii) one shall be appointed by the minority leader of the House of Representatives;

(iii) one shall be appointed by the President pro tempore of the Senate; and

(iv) one shall be appointed by the minority leader of the Senate.

(3) The Council also shall include the joint chairpersons of the Board as ex officio nonvoting members.

(b) Each person appointed to the Council shall be—

(1) eminent in the field of administrative dietetics, clinical dietetics, community nutrition research, public health nutrition, nutrition monitoring and surveillance, nutritional biochemistry, food composition and nutrient analysis, health statistics, management, epidemiology, food technology, clinical medicine, public administration health education, nutritional anthropology, food consumption patterns, food assistance programs, agriculture, or economics; and

(2) selected solely on the basis of an established record of distinguished service.

(c) The persons appointed to the Council by the President shall include—

(1) one member who is a director of a nutrition research unit that is primarily supported by Federal funds, and who has a specialized interest in nutrition monitoring;

(2) one member who is an employee of a State government and has a specialized interest in nutrition monitoring;

(3) one member who is an employee of a local government and has a specialized interest in nutrition monitoring; and

(4) one member who is an appointed representative of the Food and Nutrition Board, National Academy of Sciences.

(d) The Council membership, at all times, shall have representatives from various geographic areas, the private sector, academia, scientific and professional societies, agriculture, minority organizations, and public interest organizations.

(e) The Chairperson of the Council shall be elected from and by the Council membership. The term of office of the Chairperson shall not exceed five years. If a vacancy occurs in the Chairpersonship, the Council shall elect a member to fill such vacancy.

(f) The term of office of each of the voting members of the Council shall be five years, except that of the five members first appointed by the President, two shall be appointed for a term of two years, two for terms of three years, and one for a term of four years, as designated by the President at the time of appointment. Any member appointed to fill a vacancy

occurring prior to the expiration of the term for which the predecessor of such member was appointed shall be appointed for the remainder of such term. No member shall be eligible to serve continuously for more than two consecutive terms.

(g) The initial members of the Council shall be appointed or designated not later than ninety days after the date of the enactment of this Act.

(h) The Council shall meet on a regular basis at the call of the Chairperson, or on the written request of one-third of the members. A majority of the appointed members of the Council shall constitute a quorum.

(i) Appointed members of the Council may not be employed by the Federal Government and shall be allowed travel expenses as authorized by section 5703 of title 5, United States Code.

(j) The Administrator of Nutrition Monitoring and Related Research (if appointed under section 101(d)) shall serve as the Executive Secretary of the Council.

(k) The Council shall terminate ten years after the final comprehensive plan is prepared under section 103.

FUNCTIONS OF THE COUNCIL

SEC. 202. The Council shall—

(1) provide scientific and technical advice on the development and implementation of all components of the coordinated program and the comprehensive plan;

(2) evaluate the scientific and technical quality of the comprehensive plan and the effectiveness of the coordinated program;

(3) recommend to the Secretaries, on an annual basis, means of enhancing the comprehensive plan and the coordinated program; and

(4) submit to the Secretaries annual reports that—

(A) shall contain the components specified in paragraphs (2) and (3); and

(B) shall be included in full in the biennial reports of the Secretaries to the President for transmittal to Congress under section 102(b).

TITLE III—DIETARY GUIDANCE

ESTABLISHMENT OF DIETARY GUIDELINES

SEC. 301. (a)(1) By January 1, 1990, and at least every five years thereafter, the Secretaries shall publish a report entitled "Dietary Guidelines for Americans". Each such report shall contain nutritional and dietary information and guidelines for the general public, and shall be promoted by each Federal agency in carrying out any Federal food, nutrition, or health program.

(2) The information and guidelines contained in each report required under paragraph (1) shall be based on the

preponderance of the scientific and medical knowledge which is current at the time the report is prepared.

(b)(1) Any Federal agency which proposes to issue any dietary guidance for the general population or identifed population subgroups, shall submit the text of such guidance to the Secretaries sixty days before the publication of the notice of availability for comment required to be published in the Federal Register under this section.

(2)(A) During the sixty-day review period established in paragraph (1), the Secretaries shall review and approve or disapprove such guidance to assure that the guidance either is consistent with the "Dietary Guidelines for Americans" or that the guidance is based on medical or new scientific knowledge which is determined to be valid by the Secretaries. If after such sixty-day period neither Secretary notifies the proposing agency that such guidance has been disapproved, then such guidance may be issued by the agency. If both Secretaries disapprove of such guidance, it shall be returned to the agency. If either Secretary finds that such guidance is inconsistent with the "Dietary Guidelines for Americans" and so notifies the proposing agency, such agency shall follow the procedures set forth in this subsection before disseminating such proposal to the public in final form. If after such sixty-day period, either Secretary disapproves such

guidance as inconsistent with the "Dietary Guidelines for Americans" the proposing agency shall—

(i) publish a notice in the Federal Register of the availability of the full text of the proposal and the preamble of such proposal which shall explain the basis and purpose for the proposed dietary guidance;

(ii) provide in such notice for a public comment period of thirty days; and

(iii) make available for public inspection and copying during normal business hours any comment received by the agency during such comment period.

(B) After review of comments received during the comment period either Secretary may approve for dissemination by the proposing agency a final version of such dietary guidance along with an explanation of the basis and purpose for the final guidance which addresses significant and substantive comments as determined by the proposing agency.

(C) Any such final dietary guidance to be disseminated under subparagraph (B) shall be announced in a notice published in the Federal Register, before public dissemination along with an address where copies may be obtained.

(D) If after the thirty-day period for comment as provided under subparagraph (A)(ii), both Secretaries disapprove a proposed dietary guidance, the Secretaries shall notify the Federal agency submitting such guidance of such disapprov-

al, and such guidance may not be issued, except as provided in subparagraph (E).

(E) If a proposed dietary guidance is disapproved by both Secretaries under subparagraph (D), the Federal agency proposing such guidance may, within fifteen days after receiving notification of such disapproval under subparagraph (D), request the Secretaries to review such disapproval. Within fifteen days after receiving a request for such a review, the Secretaries shall conduct such review. If, pursuant to such review, either Secretary approves such proposed dietary guidance, such guidance may be issued by the Federal agency.

(3) For purposes of this subsection, the term "dietary guidance for the general population" does not include any rule or regulation issued by a Federal agency.

(4) For purposes of this subsection, the term "identified population subgroups" shall include, but not be limited to, groups based on factors such as age, sex, or race.

(c) This section does not place any limitations on—

(1) the conduct or support of any scientific or medical research by any Federal agency;

(2) the presentation of any scientific or medical findings or the exchange or review of scientific or medical information by any Federal agency; or

(3) the authority of the Food and Drug Administration under the provisions of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 321 et seq.).

NUTRITION TRAINING REPORT

SEC. 302. The Secretary of Health and Human Services, in consultation with the Secretaries of Agriculture, Education, and Defense, and the Director of the National Science Foundation, shall submit, within one year after the date of enactment of this Act, a report describing the appropriate Federal role in assuring that students enrolled in United States medical schools and physicians practicing in the United States have access to adequate training in the field of nutrition and its relationship to human health.

TESTIMONY OF
GEORGE E. BROWN, JR. (D-CA)
BEFORE THE
SENATE COMMITTEE ON GOVERNMENTAL AFFAIRS
ON
S. 253, THE NATIONAL NUTRITION MONITORING AND
RELATED RESEARCH ACT OF 1989

June 23, 1989

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE, I CONGRATULATE YOU FOR HOLDING THESE HEARINGS ON S. 253, THE NATIONAL NUTRITION MONITORING AND RELATED RESEARCH ACT OF 1989. AS YOU KNOW, SENATOR BINGAMAN INTRODUCED S. 253 SIMULTANEOUSLY WITH THE INTRODUCTION OF H.R. 677 BY MY COLLEAGUES AND I. THE BILLS ARE IDENTICAL TO THE BILL PASSED BY THE HOUSE AND SENATE IN THE 100TH CONGRESS. UNFORTUNATELY, PRESIDENT REAGAN DID NOT SHARE OUR WISDOM AND POCKET VETOED THE BILL ON NOVEMBER 8, 1988.

PRESIDENT REAGAN VETOED THE BILL ON THE BASIS THAT "THE BILL WOULD CREATE A SUBSTANTIAL AMOUNT OF UNNECESSARY AND COMPLEX FEDERAL BUREAUCRACY THAT WOULD HAMPER THE ACHIEVEMENT OF THE BILL'S GOALS." TO THE CONTRARY, THE BILL DID NOT CREATE A NEW BUREAUCRACY OR MANDATE A PROGRAM ADMINISTRATOR AS INDICATED IN THE VETO MESSAGE. RATHER, THE BILL PROVIDED THE FLEXIBILITY TO USE AND STRENGTHEN COORDINATION STRUCTURES CURRENTLY IN PLACE. HOWEVER, THE BILL DID MANDATE THAT THE DEPARTMENT OF HEALTH AND HUMAN SERVICES (DHHS) AND THE UNITED STATES DEPARTMENT OF AGRICULTURE (USDA) BE HELD RESPONSIBLE AND ACCOUNTABLE FOR THE COORDINATION OF NUTRITION MONITORING ACTIVITIES AMONG FEDERAL AGENCIES, AND FOR INSURING THAT EXPENDITURES FOR THESE ACTIVITIES WERE USED EFFECTIVELY. HIDDEN BEHIND THE DISGUISE OF "NEW BUREAUCRACY" IS THE EVER APPARENT "OLD TURF BATTLE". THE COSTLY AND LONG-TERM STRUGGLE OVER LEAD AGENCY RESPONSIBILITY AND JURISDICTION OVER FEDERAL NUTRITION ACTIVITIES HAS CURTAILED THE ADVANCEMENT AND DISSEMINATION

OF NUTRITION KNOWLEDGE, AND IS ONE OF THE MAJOR REASONS WHY PASSAGE OF S. 253 IS IMPERATIVE.

S. 253 AND H.R. 677 SIMPLY ASK THAT NUTRITION MONITORING AND RELATED RESEARCH BE GIVEN PRIORITY CONSISTENT WITH THE IMPORTANCE THE RESULTS OF AN EFFECTIVE SYSTEM COULD CONTRIBUTE TO PUBLIC HEALTH AND ECONOMIC WELL-BEING. THE BILLS ONLY ASK THAT WHAT THE REAGAN ADMINISTRATION DID FOR GLOBAL CHANGE RESEARCH IN 1989 BE DONE FOR NUTRITION MONITORING AND RELATED RESEARCH. IN JANUARY, THE PRESIDENT SUBMITTED WITH THE FISCAL YEAR 1990 BUDGET REQUEST A REPORT ENTITLED, OUR CHANGING PLANET: A U.S. STRATEGY FOR GLOBAL CHANGE RESEARCH. THE REPORT, DEVELOPED BY AN INTERAGENCY GROUP OF THE FEDERAL COORDINATING COUNCIL FOR SCIENCE, ENGINEERING, AND TECHNOLOGY, PRESENTS AN INITIAL STRATEGY FOR A COMPREHENSIVE LONG-TERM PLAN AND INCLUDES ASSOCIATED BUDGET ESTIMATES BY AGENCY AND BY RESEARCH ACTIVITY. A SIMILAR PLAN FOR NUTRITION MONITORING WOULD PROVIDE CONGRESS AND THE PUBLIC THE FIRST OPPORTUNITY TO DETERMINE THE APPROPRIATENESS OF THE PROPOSED ACTIVITIES AND THE LEVEL OF EXPENDITURES REQUESTED.

USDA AND DHHS DEVELOPED A JOINT IMPLEMENTATION PLAN FOR A COMPREHENSIVE NATIONAL NUTRITION MONITORING SYSTEM IN 1981 AND AN OPERATIONAL PLAN FOR A NATIONAL NUTRITION MONITORING SYSTEM IN 1987. HOWEVER, THE MAJOR OBJECTIVE OF THE IMPLEMENTATION PLAN WAS NEVER ACHIEVED. THE CRITICAL EVENTS IDENTIFIED IN THE OPERATIONAL PLAN ARE NOT DEVELOPED IN A STRATEGIC MANNER NECESSARY TO GUIDE ACTIONS. NEITHER PLAN IDENTIFIED THE BUDGETARY RESOURCES NEEDED TO CARRY OUT THE CRITICAL EVENTS, INCLUDED MECHANISMS TO COORDINATE DHHS AND USDA ACTIVITIES WITH THOSE OF OTHER FEDERAL AGENCIES, NOR IDENTIFIED LEAD AGENCY RESPONSIBILITY FOR THE TOTAL SYSTEM OR INDIVIDUAL GOALS AS DEFINED.

CLEARLY SOME PROGRESS HAS BEEN MADE SINCE THE CONGRESS FIRST MANDATED, IN THE 1977 FOOD AND AGRICULTURE ACT, THAT A PROPOSAL FOR A COMPREHENSIVE NUTRITIONAL STATUS MONITORING SYSTEM BE DEVELOPED. PAST ADMINISTRATIONS HAVE TESTIFIED BEFORE HOUSE SCIENCE AND AGRICULTURE COMMITTEES THAT A MAJOR PORTION OF THAT PROGRESS COULD BE ATTRIBUTED TO CONGRESSIONAL OVERSIGHT AND THE THREAT OF A PUBLIC LAW.

BUT, CONSIDERABLE PROGRESS REMAINS TO BE ACCOMPLISHED BEFORE A VIABLE NATIONAL NUTRITION MONITORING SYSTEM CAN BE ACHIEVED. THE MAJOR COMPONENTS NECESSARY FOR AN EFFECTIVE SYSTEM ARE INCORPORATED IN S. 253 AND H.R. 677. MANY OF THOSE COMPONENTS WERE RECOMMENDED BY A BROAD RANGE OF FOOD, NUTRITION, AND HEALTH EXPERTS, AND IN SEVERAL REPORTS OF THE NATIONAL ACADEMY OF SCIENCES.

LET ME ILLUSTRATE THE IMPORTANCE OF S. 253 THROUGH A FEW EXAMPLES OF THE MAJOR COMPONENTS OF THE BILL:

1. STIMULATE RESEARCH ON NUTRITIONAL STATUS ASSESSMENT METHODS. SCIENTIFIC METHODS AND TECHNIQUES TO ASSESS NUTRITIONAL AND DIETARY STATUS HAVE BEEN DEEMED COSTLY, IMPRECISE, AND NON-STANDARDIZED FOR MANY YEARS. THE DIETARY AND BIOCHEMICAL METHODS SO IMPORTANT TO THE USEFULNESS OF NUTRITION MONITORING SURVEYS ARE THE SAME METHODS THAT ARE USED TO ASSESS AND GUIDE THE HEALTH OF INDIVIDUALS. THUS, INVESTMENTS IN METHODS RESEARCH WOULD NOT ONLY MAKE MORE EFFECTIVE USE OF FUNDS EXPENDED FOR NUTRITION MONITORING SURVEYS AT BOTH THE FEDERAL AND STATE LEVELS, BUT COULD ALSO IMPROVE THE TOOLS OF NUTRITION RESEARCHERS AND HEALTH-CARE PRACTITIONERS.

FOR EXAMPLE, IN ADDITION TO THE THOUSANDS OF BLOOD CHOLESTEROL TESTS CONDUCTED BY THE NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY (NHANES), NEARLY 100 MILLION OF THESE TESTS ARE PERFORMED YEARLY IN CONJUNCTION WITH THE DISEASE PREVENTION AND HEALTH PROMOTION PROGRAMS OF INDIVIDUALS. FOR MANY YEARS CONCERN HAS BEEN EXPRESSED ABOUT THE ACCURACY OF THE TEST RESULTS. REFERENCE MATERIALS WITH KNOWN VALUES TO ASSURE THAT THE ANALYTICAL INSTRUMENTS USED TO MEASURE CHOLESTEROL GIVE RELIABLE RESULTS WERE NOT AVAILABLE. A 10-YEAR COOPERATIVE RESEARCH EFFORT OF THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY AND THE COLLEGE OF AMERICAN PATHOLOGISTS DEVELOPED MATERIALS FOR IMPROVING THE RELIABILITY OF CHOLESTEROL TESTS. THESE STANDARD REFERENCE MATERIALS WHICH WILL IMPROVE THE ACCURACY OF CHOLESTEROL TESTING BECAME AVAILABLE FOR THE FIRST TIME IN 1987.

RECENTLY, SCIENTISTS AT THE AGRICULTURE RESEARCH SERVICE DEVELOPED A NEW NUTRIENT ASSAY WHICH INDICATES THAT EGGS CONTAIN 23 PERCENT LESS CHOLESTEROL THAN PREVIOUS ESTIMATES BASED ON 1960 DATA. THIS NEW METHOD ALSO REVEALS THAT THE PREVIOUS NUTRIENT VALUES OF EGGS FOR IRON, FAT, AND SOME B VITAMINS WERE OVERSTATED BY AT LEAST 10 PERCENT. IN THIS CASE, THE NEW METHOD IS NOT THOUGHT TO BE MORE ACCURATE, BUT A MORE APPROPRIATE MEASURE THAN PREVIOUS METHODS. CLEARLY, RESEARCH ON OTHER NEW METHODS WOULD ADD TO OUR KNOWLEDGE OF THE NUTRIENT COMPOSITION OF FOODS AND THUS THE ACCURACY OF NUTRITION MONITORING SURVEYS. SIMILARLY, NEW KNOWLEDGE COULD ENHANCE THE VALUE OF THE DATA TO USERS, AND CONTRIBUTE TO PRUDENT DIETARY GUIDANCE.

2. TECHNICAL ASSISTANCE TO STATES. AN INCREASING NUMBER OF STATES ARE EXPRESSING A NEED FOR NUTRITIONAL AND HEALTH STATUS DATA TO USE AS A BASIS FOR ESTABLISHING FOOD AND HEALTH SERVICE PRIORITIES AND ALLOCATING SCARCE PUBLIC HEALTH RESOURCES. FOR EXAMPLE, UNDER PROVISIONS OF THE CALIFORNIA NUTRITION MONITORING DEVELOPMENT ACT OF 1986, A REPORT DETAILING AVAILABLE NUTRITION MONITORING DATA AND INFORMATION NEEDED TO ASSESS THE FEASIBILITY OF ESTABLISHING A PROTOTYPE DATA SYSTEM WAS SUBMITTED TO THE GOVERNOR FOR FINAL REVIEW IN MAY OF THIS YEAR. AN EFFECTIVE AND COORDINATED NATIONAL NUTRITION MONITORING SYSTEM COULD BE OF CONSIDERABLE ASSISTANCE TO STATE ACTIVITIES. IN TURN, A CORE SET OF DATA COLLECTED THROUGH STATE NUTRITION MONITORING SYSTEMS COULD CONTRIBUTE TO A NATIONAL DATA SET.

3. SCIENTIFIC ADVICE. THE PREVIOUS ADMINISTRATION WAS STRONGLY OPPOSED TO SEEKING RECOMMENDATIONS ON THE DEVELOPMENT OF PLANS AND PROTOCOLS FOR NUTRITION MONITORING AND RESEARCH FROM DATA USERS AND EXPERTS IN THE FOOD AND HEALTH COMMUNITIES. AS A RESULT, NUTRITION MONITORING SURVEYS AND RESEARCH CONDUCTED OR MANAGED WITHIN THE AGENCIES ARE IMPLEMENTED WITHOUT THE BENEFIT OF MERIT REVIEW. OTHER BIOMEDICAL OR AGRICULTURAL RESEARCH PROJECTS OF THIS MAGNITUDE AND SIGNIFICANCE ARE SUBJECT TO MERIT REVIEW BY SCIENTIFIC PEERS. NEITHER THE CURRENT NUTRITION MONITORING SURVEY DESIGNS NOR THE 1987 OPERATIONAL PLAN HAD THE BENEFIT OF A SCIENTIFIC ADVISORY COUNCIL SUCH AS THAT CALLED FOR IN S. 253.

4. INTERAGENCY COORDINATION. IN TESTIMONY BEFORE THE HOUSE SCIENCE AND AGRICULTURE COMMITTEES, PREVIOUS ADMINISTRATION WITNESS HAVE REPEATEDLY INDICATED THAT PROGRESS HAS BEEN MADE IN INTERAGENCY COORDINATION OF NUTRITION MONITORING ACTIVITIES. THE PROGRESS APPEARS TO CONSIST OF MEETINGS, DEVELOPMENT OF REPORTS, AND REVISION OF PLANS.

HOWEVER, THE OUTCOMES OF THESE ACTIONS HAVE RESULTED IN LITTLE CONCRETE EVIDENCE OF PROGRESS TOWARD COOPERATION AMONG AGENCIES, AND COMPATIBILITY OF SURVEY DESIGNS WHICH ARE IMPORTANT TO BOTH REDUCING THE COST OF THE SURVEYS AND INCREASING THE USEFULNESS OF THE DATA.

FOR EXAMPLE, THE 1987 OPERATIONAL PLAN INDICATED THAT FINAL REVIEW AND CLEARANCE PROCESSES PRECLUDED FULL ACCEPTANCE OF THE PROPOSALS OF A USDA/DHHS TASK FORCE TO IMPROVE COMPARABILITY OF SOCIODEMOGRAPHIC VARIABLES, AND THAT LIMITED PROGRESS HAD BEEN ACHIEVED IN COMPATIBLE SAMPLING DESIGN. AT HEARINGS BEFORE THE HOUSE SCIENCE, RESEARCH AND TECHNOLOGY SUBCOMMITTEE IN SEPTEMBER, 1988, USDA AND DHHS WITNESSES ADMITTED THAT AFTER ONE YEAR OF DISCUSSIONS THEY COULD NOT COME TO AN AGREEMENT ON QUESTIONS TO BE INCLUDED IN NHANES III REGARDING FOOD ASSISTANCE PROGRAMS AND FOOD SUFFICIENCY. THE NEGOTIATIONS WERE LEFT TO THE OFFICE OF MANAGEMENT AND BUDGET WHEN THE SURVEY FORMS WERE SUBMITTED FOR CLEARANCE. THE PROCESS CAME WITHIN LITERALLY DAYS OF DELAYING THE BEGINNING OF NHANES III. SUCH A DELAY WOULD HAVE COST THOUSANDS OF DOLLARS TO RETAIN THE SURVEY TEAMS UNTIL THE ISSUE WAS RESOLVED.

AS YOU KNOW, THE BILL WHICH PRESIDENT REAGAN VETOED LAST YEAR WAS SUPPORTED BY A BROAD RANGE OF FOOD, AGRICULTURE, HEALTH AND CONSUMER ORGANIZATIONS. IN ADDITION, NUMEROUS RECENT REPORTS AND RECOMMENDATIONS ADDRESSED THE NEED FOR AN ENHANCED NATIONAL NUTRITION MONITORING SYSTEM AND LEGISLATION SUCH AS S. 253 AND H.R. 677.

THE JULY, 1988 SURGEON GENERAL'S REPORT ON NUTRITION AND HEALTH STATED:

> "IMPRESSIVE EVIDENCE ALREADY LINKS NUTRITION TO CHRONIC DISEASE. HOWEVER, MUCH MORE INFORMATION IS NEEDED TO CONTINUE TO IDENTIFY CHANGES IN THE NATIONAL DIET THAT WILL LEAD TO BETTER HEALTH FOR THE NATION. GAPS IN OUR KNOWLEDGE OF NUTRITION SUGGEST FURTHER RESEARCH AND SURVEILLANCE NEEDS."

SEVERAL OF THE EXAMPLES GIVEN WERE RELATED TO NUTRITION MONITORING, INCLUDING:

> "THE NUTRIENT AND ENERGY REQUIREMENTS OF OLDER ADULTS; HOW NUTRIENT REQUIREMENTS TRANSLATE INTO HEALTHFUL DIETARY PATTERNS, THE DEVELOPMENT OF DIETARY MARKERS OF DIETARY INTAKE TO MONITOR BETTER THE EFFECTS OF DIETARY INTERVENTION; AND THE ESTABLISHMENT OF A NUTRITION SURVEILLANCE SYSTEM THAT WILL ENHANCE THE MONITORING OF POPULATION-SPECIFIC AND STATE-SPECIFIC TRENDS IN THE OCCURRENCE OF NUTRITION-RELATED RISK FACTORS AND CONDITIONS."

THE MARCH, 1989 REPORT OF THE NATIONAL RESEARCH COUNCIL/NATIONAL ACADEMY OF SCIENCES ENTITLED, DIET AND HEALTH: IMPLICATIONS FOR REDUCING CHRONIC DISEASE RISK RECOMMENDED:

> "IMPROVEMENT OF THE METHODOLOGY FOR COLLECTING AND ASSESSING DATA ON THE EXPOSURE OF HUMANS TO FOODS AND DIETARY CONSTITUENTS THAT MAY ALTER THE RISK OF CHRONIC DISEASES."

THE COUNCIL RECOMMENDED THAT HIGH PRIORITY BE GIVEN TO:

> "DEVELOPMENT OF BETTER METHODS TO MONITOR AND QUANTIFY DIETARY EXPOSURES IN HUMAN POPULATIONS. THIS INCLUDES IMPROVEMENT IN FOOD COMPOSITION DATA FOR BOTH NUTRITIVE AND NONNUTRITIVE SUBSTANCES, METHODS FOR MORE FREQUENT AND LONG-TERM MONITORING OF DIETARY INTAKE, AND BETTER METHODS TO QUANTIFY DIETARY INTAKE, ESPECIALLY FOR ENERGY AND ALCOHOL. IN PARTICULAR, THE METHODOLOGY OF USDA'S NATIONWIDE FOOD CONSUMPTION SURVEYS AND THE NATIONAL CENTER FOR HEALTH STATISTICS' HEALTH AND NUTRITION EXAMINATION SURVEYS SHOULD BE IMPROVED TO PERMIT ASSESSMENT OF THE LONG-TERM HEALTH EFFECTS OF DIETARY FACTORS, BOTH NUTRITIVE AND NONNUTRITIVE."

IN APRIL, 1989 A USDA ADVISORY BODY, THE HUMAN NUTRITION BOARD OF SCIENTIFIC COUNSELORS, PASSED SEVERAL RESOLUTIONS THAT RELATE TO NUTRITION MONITORING AND ARE COMPONENTS OF S. 253 AND H.R. 677.

THE RESOLUTIONS INCLUDED:

"RESOLUTION 1, RELATING TO NUTRITION MONITORING:

RESOLVED THAT THE HUMAN NUTRITION BOARD OF SCIENTIFIC COUNSELORS URGES THE SECRETARY OF AGRICULTURE TO SUPPORT LEGISLATION WHICH WILL:

1. ESTABLISH A PLAN FOR A NATIONAL NUTRITION MONITORING SYSTEM (NNMS);

2. PROVIDE A MECHANISM FOR INTERDEPARTMENTAL COORDINATION OF THE VARIOUS PARTS OF THE NNMS;

3. PROVIDE FOR COOPERATION BETWEEN THE NNMS AND STATE SYSTEMS FOR NUTRITION MONITORING; AND,

4. PROVIDE A MECHANISM WHEREBY NUTRITION GUIDANCE FOR THE GENERAL POPULATION PROPOSED BY A FEDERAL AGENCY WILL BE REVIEWED BY THE SECRETARIES OF AGRICULTURE AND HEALTH AND HUMAN SERVICES BEFORE ITS RELEASE--A MECHANISM WHICH WILL ALLOW FOR PUBLIC REVIEW AND COMMENT OF THAT GUIDANCE; AND, WHICH WILL NOT PREVENT THE RELEASE OF NUTRITION GUIDANCE AFTER APPROPRIATE REVIEW IF IT IS DEEMED NECESSARY AND APPROPRIATE BY THE RESPONSIBLE FEDERAL AGENCY."

"RESOLUTION 4, RELATING TO PRIORITIES IN COLLECTION OF FOOD CONSUMPTION DATA:

RESOLVED THAT THE HUMAN NUTRITION BOARD OF SCIENTIFIC COUNSELORS EXPRESS ITS SUPPORT FOR INCREASED PRIORITY IN FOOD CONSUMPTION DATA COLLECTION ON AGING AMERICANS AND OTHER POPULATIONS AT NUTRITIONAL RISK."

I LOOK FORWARD TO WORKING WITH THIS COMMITTEE AND THE EXECUTIVE BRANCH TO INSURE PASSAGE OF THE NATIONAL NUTRITION MONITORING AND RELATED RESEARCH ACT OF 1989 EARLY IN THE 101ST CONGRESS.

TESTIMONY OF JAMES T. HEIMBACH

ACTING ADMINISTRATOR, HUMAN NUTRITION INFORMATION SERVICE

U.S. DEPARTMENT OF AGRICULTURE

BEFORE THE

SENATE COMMITTEE ON GOVERNMENTAL AFFAIRS

June 23, 1989

Mr. Chairman and members of the Committee, I am James Heimbach, Acting Administrator of the Human Nutrition Information Service of the U.S. Department of Agriculture (USDA). I would like to thank you for the opportunity to discuss the Department's nutrition monitoring activities and to comment on S.253, the National Nutrition Monitoring and Related Research Act of 1989. S.253 and the House Companion Bill H.R.677 are identical to S.1081, legislation pocket vetoed by President Reagan on November 8, 1988. This Administration also opposes these bills for the reasons I will discuss. I am pleased to join with our fellow nutrition monitoring colleagues at the Department of Health and Human Services (DHHS) to share with you the progress we are making and our vision for the future of the Nutrition Monitoring System.

Nearly two years ago, USDA and DHHS submitted a Joint Operational Plan for the National Nutrition Monitoring System (NNMS) for the years 1987-96. This plan (which would be required by S.253, Title I, Sec. 102(a)(2) is an update of the 1981 Implementation Plan mandated by Congress. The new Operational Plan describes three broad goals for us to work toward during the 10 year period. They are: achieve a comprehensive system through coordination among NNMS components; improve information dissemination and exchange; and improve the research base for nutrition monitoring. I believe these goals address most, if not all, of the purposes stated in the Bill you are considering.

My remarks today will cover the activities USDA is committed to performing and how these contribute to the goals of the NNMS Operational Plan. For your convenience, I have included with this statement a temporal chart showing USDA's surveys and the National Health and Nutrition Examination Survey (NHANES) of DHHS (Attachment I). Appendix Table I of the Operational Plan lists the many other components of the NNMS by the type of data they provide.

First, how are we achieving a comprehensive system through coordination of the NNMS components? The Human Nutrition Information Service (HNIS) is the lead USDA agency for nutrition monitoring. Up to now, our major emphasis has been on coordinating USDA's Nationwide Food Consumption Survey (NFCS) with the NHANES. Much progress has been made. For example:

- The questionnaires used in a recent NHANES and that proposed for use in NFCS 1987-88 were compared prior to the beginning of the NFCS 1987-88 data collection. Thirty-eight variables were studied by a joint working groups from USDA's HNIS and DHHS's National Center for Health Statistics (NCHS). For many of these variables, little or no difference existed between the two questionnaires. Improvements were made to attain closer linkage where appropriate. We have documented the changes we made in the NFCS 1987-88 questionnaire.

- For some variables, such as definition of income, there are conceptual differences related to the different purposes of the two surveys. This should not be viewed as a weakness. NNMS provides data for many different purposes. It is not possible to design a single survey that will adequately meet the divergent needs of these two surveys. Recognizing these differences is essential.

- Another joint working group reviewed the dietary intake methodology used by both NFCS and NHANES--the 24-hour recall--for comparability. Suggested changes included use of a single food-coding system and nutrient data base for surveys of both

Departments and the addition of the NFCS set of measurement aids to the HNANES set of models.

Once again, identical procedures are not possible because of fundamental differences in how these surveys are conducted. For example, NFCS is conducted in the home while NHANES takes place in the Mobile Examination Center. A report of the suggestions and how they might be implemented is available.

- Improvements in the comparability of data reporting have been put in place with NFCS 1987-88 and NHANES III. For example, the same age groupings will be used by both as well as similar documentation formats for both printed reports and data types.

A similar review process for comparability was used again prior to final questionnaire clearance for NHANES III and HNIS's 1989 Continuing Survey of Food Intakes by Individuals (CSFII).

Another task is to improve our coverage of monitoring activities. To facilitate this, DHHS and USDA have established the Interagency Committee for Nutrition Monitoring (ICNM) as called for in S.253, Title I, Sec.101(c). ICNM is chaired by the Assistant Secretary for Health, DHHS, and the Assistant Secretary for Food and Consumer Services, USDA. It is a parallel group to the Interagency Committee for Human Nutrition Research (ICHNR). The ICNM has representatives from each of the USDA and DHHS agencies involved in monitoring activities as well as representatives from the Department of Defense (DOD), the Department of Commerce, the Department of Labor, and the Veterans Administration (VA). The ICNM has set up working groups to

address specific topics, including Federal-State relations, information dissemination and exchange, food composition data and survey complementarity.

A draft of the NNMS Directory (as could be required by S.253 Title I Sec.103(b)(11), which describes the various NNMS activities in detail, will be available early this fall. This should be a useful tool for interested parties inside and outside the Federal Government.

The Operational Plan points out two other important objectives as part of the coordination goal--improved timeliness of reporting of survey data and coverage of high risk individuals, both of which are addressed in S.253. USDA has designed the CSFII with these goals in mind. This survey was initiated in 1985. We have completed two years of data collection from specific high risks groups--women 19-50 years of age and their children 1-5 years of age, including a separate low-income sample as mandated by the Food Security Act of 1985. A sample of men, 19-50 years of age, was included in 1985.

The first results of the 1985 CSFII were released only six months after data collection was completed. We have now completed the release of all of the reports and data tapes from both the 1985 and 1986 surveys. We are extremely proud of the new effort represented by the CSFII and the timely release of data from the first two years.

The CSFII is the first attempt to assess a national sample on a continuous basis ever initiated in this or any other country. The ability to track and forecast dietary problems on a continuous basis is increasingly important as Americans respond to shifts in variables that affect diet, such as employment, family makeup, income, and perceptions about diet/health relationships. The CSFII results have been useful to

USDA and others in formulating and supporting policies relating to dietary status, dietary guidance, food assistance programs, and food production and marketing. For example:

- Nutrient distributions of 4-day dietary intakes suggest that folacin, iron, zinc, vitamin B-6, magnesium and calcium are problem nutrients for women. These are the same six problem nutrients identified in the 1977 NFCS. These findings are true regardless of income.

- Consumption of 300 milligrams or less of cholesterol, as suggested by the National Heart, Lung and Blood Institute and the National Research Council Report on Diet and Health, was achieved in 62 percent of the women's 4-day diets.

- Only 12 percent of women had fat intakes over four days that furnished less than 30 percent of calories; 33 percent had diets with fat providing less than 35 percent of calories. Those women whose diets were below 35 percent of calories from fat had lower mean intakes of calcium, iron, and zinc.

- Most children studies, especially those 1-3 years, failed to meet the RDA for iron, zinc, and calcium.

- Appropriate targeting of the Food Stamp Program was shown: households receiving food stamps fared as well or better nutritionally as those food stamp eligible households who were not program participants. This was despite the fact that the households participating in the Food Stamp Program had lower incomes that the eligible but non-participating households.

- Changes in eating patterns were apparent when the 1985-86 data were compared to the 1977-78 NFCS. Women were drinking more low-fat milk and eating less red meat. Their overall percentage of calories from fat declined to 37 percent from 41 percent. The change in meat consumption was most dramatic for high-income women. Interestingly, these high-income women did not reduce their fat intake as much as might be expected because they got more of their fat from creamy desserts, salad dressings, table fat, and cheeses instead of from nutrient-dense red meat.

The CSFII was reinstated on April 1 of this year. The survey has been redesigned to support moving-average reporting as a cost-effective means of providing trend information in a timely manner. The moving-average approach, recommended by two committees of the National Academy of Sciences, will be used in CSFII to provide annual estimates of three days of dietary intakes for all sex-age groups. The continuous collection and analysis of dietary status as planned for the CSFII would be required by S.253 (Title I, Sec. 103(b)2).

The collection of three days of intake data is an important aspect of all USDA surveys. One-day intakes are appropriate for estimating mean nutrient intakes by population segments. However, research indicates that data on individual food intakes for at least three days are needed to assess the proportion of the population meeting standards such as the Recommended Dietary Allowances.

Another aspect of the CSFII is a first. The CSFII has been designed to accommodate modules from other agencies with concerns relative to

nutrition monitoring. A cooperative effort among HNIS, USDA's Food Safety and Inspection Service, and DHHS's Food and Drug Administration (FDA) was established to conduct a survey on consumer attitudes on diet/health issues as a followup to the 1989 CSFII. This project represents the first time that a nationwide sample will be used to study the relationship between individuals' actual dietary intakes and their attitudes about dietary behavior. Such cooperative ventures build on the FDA experience in conducting attitude surveys and HNIS experience in conducting food consumption surveys.

CSFII, with its yearly data collection and reporting, is both economical and flexible. It maximizes staff productivity and provides a flexible structure into which topical issues and methodological investigations can be incorporated.

NFCS 1987-88 data collection began in April 1987 and ended late last year. This comprehensive decennial survey would be required by S.253, Title I, Sec. 103(b)(1). In addition to data on intakes of individuals, the NFCS includes information on the foods used by households during a seven-day period and the cost of those foods. Data from this survey will form the research basis for a new revision of the Thrifty Food Plan, which is in turn the basis for Food Stamp Program allotments. A computerized model will be used to form a food plan which minimizes deviation from the food consumption patterns of low-income households while meeting nutritional specifications at given costs.

We are now analyzing a study designed to assess the effect on measurement of food intakes of procedural and data base changes between NFCS 1977-78 and NFCS 1987-88. We call this a "bridging survey."

Preliminary analysis indicates that our substantial improvements in our procedures have not lessened the comparability of the results between the surveys.

The combination of the decennial survey (NFCS) and the smaller continuous survey (CSFII) has several advantages. The decennial survey provides data from sufficiently large groups to study differences among population segments with regard to socioeconomic factors associated with food consumption and expenditure patterns. The smaller surveys are used to monitor trends in food intakes by the general and low-income populations. The CSFII is designed so that high risk groups (Hispanics, native Americans, elderly, etc.) can be targeted as funds are made available.

In designing these surveys and their questionnaires, we contacted numerous government agencies and individuals in academia, industry and public health nutrition for input, in addition to the close collaboration with NCHS described earlier.

The second goal of the 1987 Operational Plan is to improve information dissemination and exchange, again a goal covered by S.253. The Departments have implemented a reporting system that integrates the results of the monitoring system components into common reports. The first report to Congress on the nutritional status of the population was made in 1986 by a Federal advisory committee (Joint Nutrition Monitoring Evaluation Committee) jointly sponsored by USDA and DHHS. This report provided baseline data for dietary and nutritional status.

A second report will include an update on the dietary and nutritional status of the U.S. population based on survey data released since publication of the first report. It will also include an indepth

analysis of nutritional factors affecting cardiovascular disease and iron nutriture. The Life Sciences Research Office (LSRO) of the Federation of American Societies for Experimental Biology (FASEB) has prepared this scientific evaluation and interpretation of NNMS data. An ad hoc Expert Panel on Nutrition Monitoring, composed of persons outside the Government who represented a variety of disciplines, including agriculture economics, nutrition, behavioral sciences, epidemiology, public health, and statistics, was selected by LSRO to prepare this report. USDA briefed the Expert Panel on USDA monitoring activities and on results from the CSFII, and provided analytical support. We expect the LSRO report to be ready in summer 1989. It will be used by the Secretaries to report to Congress. A similar reporting system would be required by S.253 (Title I, Sec.102(a)(8).

We are continuing to work with state and local groups interested in nutrition monitoring to increase the usefulness of our data to them. USDA and DHHS participated in several workshops sponsored by the Association of State and Territorial Public Health and Nutrition Directors (ASTPHND) during 1986 and 1987. These were practical sessions designed to improve state and local personnel's knowledge of the NFCS, CSFII and NHANES data files. Such activities would be required by S.253 (Title I, Sec.102(a)(7).

We currently sponsor the National Nutrient Data Base Conference (NNDBC) which meets annually to discuss issues pertinent to this food composition data base as well as to Nutrition Monitoring activities. These conferences give USDA an opportunity to receive valuable input from all sectors for improvement of the data system. However, we are aware that many interested individuals and groups may not have easy access to up-to-date information about the NNMS. We are exploring several ways to communicate our activities more widely in an efficient and cost-effective manner.

USDA continues to provide indepth analysis of the CSFII and NFCS data bases with specific emphasis on policy relevant issues, including those relating to agriculture, food assistance, and nutrition education. Most of this work is done through competitive cooperative agreements with universities. Eight such studies have been completed using the 1985-86 CSFII and three new agreements have recently been signed using data from the household food use portion of the NFCS 1987-88. Two additional studies using data from the individual intake portion of the NFCS are now being negotiated.

The final goal of the 1987 Operational Plan is to improve the research data base for nutrition monitoring, again a point addressed by S.253. HNIS and the Nutrition Composition Laboratory of Agricultural Research Service (ARS) have a well established system of priority setting with respect to food composition data. Such data are an essential part of the nutrition monitoring system. The Department has made significant advances in the past decade in nutrient analyses and the National Nutrient Data Bank. In 1977, reliable food composition data were available to evaluate the intakes of individuals for calories and 14 nutrients. By 1985, reliable data were available for 28 nutrients.

Added nutrients and other food components include many considered to be of public health importance--cholesterol, fatty acids, dietary fiber, sodium, potassium, carotene, folacin, zinc, copper, and vitamin E. Not only has the number of nutrients been expanded, but the quality of the food composition data has increased significantly. This is due to improved methods for laboratory analysis as well as improved sampling on a nationwide basis of those foods that contribute significantly to the intakes of specific nutrients.

Progress in relation to long-term plans for the revision of Agriculture Handbook No. 8 "Composition of Foods...Raw, Processed, Prepared" continues. To date, 18 of the 22 sections have been published. The remaining sections are expected to be completed by 1990 with revisions of already published volumes well underway. Noticeable among these is the revision of "Beef and Beef Products" which is expected to be out later this year. It will reflect the changes in marketing, particularly fat trim, that have been introduced in the past several years.

One of the primary problems in keeping pace with health and disease concerns is anticipating which nutrients will be a major concern in the future. In 1985, when it was hypothesized that selenium might be a deterrent to cancer, major emphasis was directed towards determining the selenium content of foods. Because the selenium content of a specific food varies depending on where it is grown, this work required a major sampling of foods across the country. However, by 1990, we expect to be able to add selenium to the nutrient data base for evaluating intakes from the CSFII.

With the increased interest in fiber in the diet, HNIS has initiated an international collaborative research project on dietary fiber analysis. Laboratories in the United Kingdom, Canada, and the U.S. are analyzing 50 U.S. foods by the official Association of Official Analytical Chemists method and three other procedures. Evaluation of this collaborative research will greatly enhance the quality of fiber data in the future.

During the past several years, we have begun to focus more closely on possible coordination on nutrition monitoring research priorities at all the ARS Human Nutrition Research Centers. The process includes regular meetings of the Center Directors with the HNIS Administrator and staff. From these exchanges, a greater understanding of the problems at hand is achieved.

HNIS also works with universities and others to answer specific research questions. For example, the Department has undertaken 13 major methodological studies in the past 12 years. These studies were designed to increase the validity and reliability of survey results while minimizing costs. They expanded understanding of many survey elements including interview modes (mail, telephone, personal), respondent support needed (probes), measurement aids for more precise estimation of portion size, reliability of surrogate reporting, respondent burden, number and spacing of days to sample, varied sizes of nutrient data base, response errors, and food frequency questions. Several studies were directed toward determining the appropriate data collection methodology for CSFII, improving the timeliness of data reporting, and increasing responses from minorities and the elderly. A summary of these studies is available. The total cost of these studies was $4,471,000.

It should be clear from these activities that USDA has a serious commitment to the NNMS and is working diligently to improve the system in feasible and cost effective ways. The Department's FY 1989 budget contains $6.4 million for monitoring activities carried out by HNIS. Additional human nutrition research is conducted by the USDA through other agencies--ARS and the Cooperative State Research Service (CSRS).

S.253 would not add to the NNMS in our opinion, rather it would delay further implementation of many of the activities I have described here. As I have already stated, USDA and DHHS have taken a number of steps over the past few years to improve the NNMS. We believe these efforts are completely in accord with the purposes set forth in Section 2 of S.253.

There are a number of specific provisions in S.253 which we strongly oppose. The bill sets up a management structure for NNMS and details very specific requirements for a comprehensive plan. In addition to the Interagency Board which we have already put in place, Sec.2 of S.253 would require a nine member Advisory Council and Sec.101(d) would authorize the appointment of an Administrator of Nutrition Monitoring and Related Research. With or without an Administrator and staff, the requirement for the Advisory Board and the preparation of an annual report by the Council, in addition to biennial reports from the Secretaries, would place significant burdens on those agencies responsible for collecting and analyzing the monitoring data. We have been advised by the Justice Department that the creation of the National Nutrition Monitoring Advisory Council, as contained in S.253, violates the principles underlying the separation of powers. As established by this bill, the Council could not be considered to be part of either the Executive Branch or the Legislative Branch and would be in the difficult position of having to serve two masters simultaneously. Justice believes Congress should refrain from establishing Commissions that are not clearly within either the Executive or Legislative Branch, as this tends to erode the structural separation of powers.

S.253 would require also that two grant programs be set up. One would be a competitive grants program to "accelerate the development of uniform and cost-effective standards and indicators for the assessment and monitoring of nutritional and dietary status for relating food consumption patterns to nutritional and health status" (Title I, Sec.102(a)(4). The other would be is a grant program "to encourage and assist state and local governments in developing the capacity to conduct monitoring and surveillance of nutritional status, food consumption, and nutrition knowledge and in using such capacity to enhance nutrition services" (Title I, Sec.102(a)(5). Title I, Sec. 105 would require the Secretaries to coordinate appropriate scientific research and development by the National Science Foundation, National Aeronautic and Space Administration, National Oceanic and Atmospheric Administration, the National Institute of Standards and Technology, and other suitable Federal agencies.

Perhaps the most troubling portion of S.253 is Title I, Sec.103(b)2, which would require by 1991, a new survey or at least one in addition to NHANES and NFCS. This new survey will be a "stratified probability samples of the people of the United States designed to permit statistically reliable estimates of high-risk groups and geopolitical or geographic areas...." Earlier in S.253, separate data would be required for "preschool and school-age children, pregnant and lactating women, elderly individuals, low-income populations, blacks, Hispanics, and other groups" (Title I, Sec.103(a)(1). Although the Secretaries are given discretion here, one survey providing statistically reliable estimates for all these categories would be very large and costly. We welcome ideas from anyone interested in NNMS, but we believe S.253 would present serious management burdens and delay improvements in the valuable activities already underway.

In addition, requirements of this legislation would generate significant increases in expenditures for the advisory council, the Administrator and staff, the grant programs, and new or expanded surveys. Yet, in 6 of the last 7 years, Congress has failed to appropriate the President's budget request for HNIS.

S.253 also addresses the issue of dietary guidance. USDA and DHHS have a long history of human nutrition research and of translating these research findings into usable information for the healthy American public. The Food and Agriculture Act of 1977 (PL 95-113) designated the USDA as the lead agency of the Federal Government for research, extension, and teaching in food and agricultural sciences (with the exception of biomedical aspects) including human nutrition. With this legislation, Congress supported USDA's traditional emphasis on the nutritional needs of normal, healthy individuals rather than the needs of individuals requiring clinical or therapeutic dietary support. In Section 1421, the 1977 Act states "It is hereby declared to be the policy of the United States that the Department of Agriculture conduct research in these fields of human nutrition and nutritive value of foods and to conduct human nutrition education activities..."

Within USDA, eight agencies have ongoing programs which promote and implement the Dietary Guidelines for Americans. These agencies and their primarily food and nutrition information and education responsibilities are:

- The Extension Service operates Food and Nutrition Education Programs in partnership with the Cooperative Extension System to disseminate knowledge and applied research directly to the

general public. It also operates the Expanded Food and Nutrition Education Program (EFNEP), a mandated program for low-income families and youth.

- The Human Nutrition Information Service coordinates dietary guidance policy, develops research-based dietary guidance materials for the general public, and reports results from its research in food composition, food consumption, and nutrition education to professionals.

- The National Agricultural Library, through its Food and Nutrition Information Center, collects and disseminates information on a wide range of nutritional topics and accumulates and loans nutrition education materials to educators.

- The Agricultural Research Service and the Cooperative State Research Service report results from their programs of food and nutrition research usually to professional audiences.

- The Food Safety and Inspection Service is responsible for the safety, wholesomeness, and accurate labeling of meat and poultry products and for informing the public on safe handling of these foods.

- The Agricultural Marketing Service is responsible for the grading of foods and for the accuracy of promotional materials of some commodity groups.

- The Food and Nutrition Service supports the nutrition education components of food assistance programs they administer--Child Nutrition, WIC, Food Stamp.

- The Office of Governmental and Public Affairs provides, reviews, and coordinates all food and nutrition information disseminated by USDA.

We and DHHS have taken seriously the direction of the Appropriations Committee of the House to encourage the Federal Government to speak with one voice when issuing dietary guidance. The public needs messages that are not confusing and conflicting if they are to act on them in an appropriate way. To aid in this effort, a Dietary Guidance Working Group was formed within USDA at the beginning of 1986. This group reviews all guidance from USDA going to the general public to insure its consistency with the Dietary Guidelines for Americans. We believe this has strengthened dietary guidance messages going out to various audiences. DHHS provides a liaison member to the USDA working group and we send a liaison representative to their Subcommittee on Dietary Guidance. USDA continues to endorse and promote the Dietary Guidelines for Americans as the best information available for the general public. We have a number of research projects underway to help us deliver the message in more effective ways to various target populations--from school-age children to the elderly low-income and upper-income. This has been and remains a primary function of USDA.

A Federal advisory committee has been jointly established by USDA and DHHS to examine the 1985 edition of the Dietary Guidelines in light of new scientific evidence to determine if a change in any of the

Guidelines is necessary. This Committee held their first meeting in early April of this year. The Committee will report their recommendations to the Secretaries of the Departments.

The objections I have cited, along with the positive results from the current nutrition monitoring system, lead us to the conclusion that S. 253 is unnecessary and potentially harmful in achieving our monitoring goals, which are consistent with those of the proposed legislation. On March 23, 1989, House Agriculture Committee Chairman de la Garza introduced H.R.1608, the Comprehensive National Nutrition Monitoring System Act. The Administration believes that this bill, with certain modifications, would be acceptable. H.R.1608 amended to incorporate certain changes--the most notable being the removal of the bill's veto arrangement on the issuance of dietary guidelines--is in line with our mutual goals and is significantly less costly.

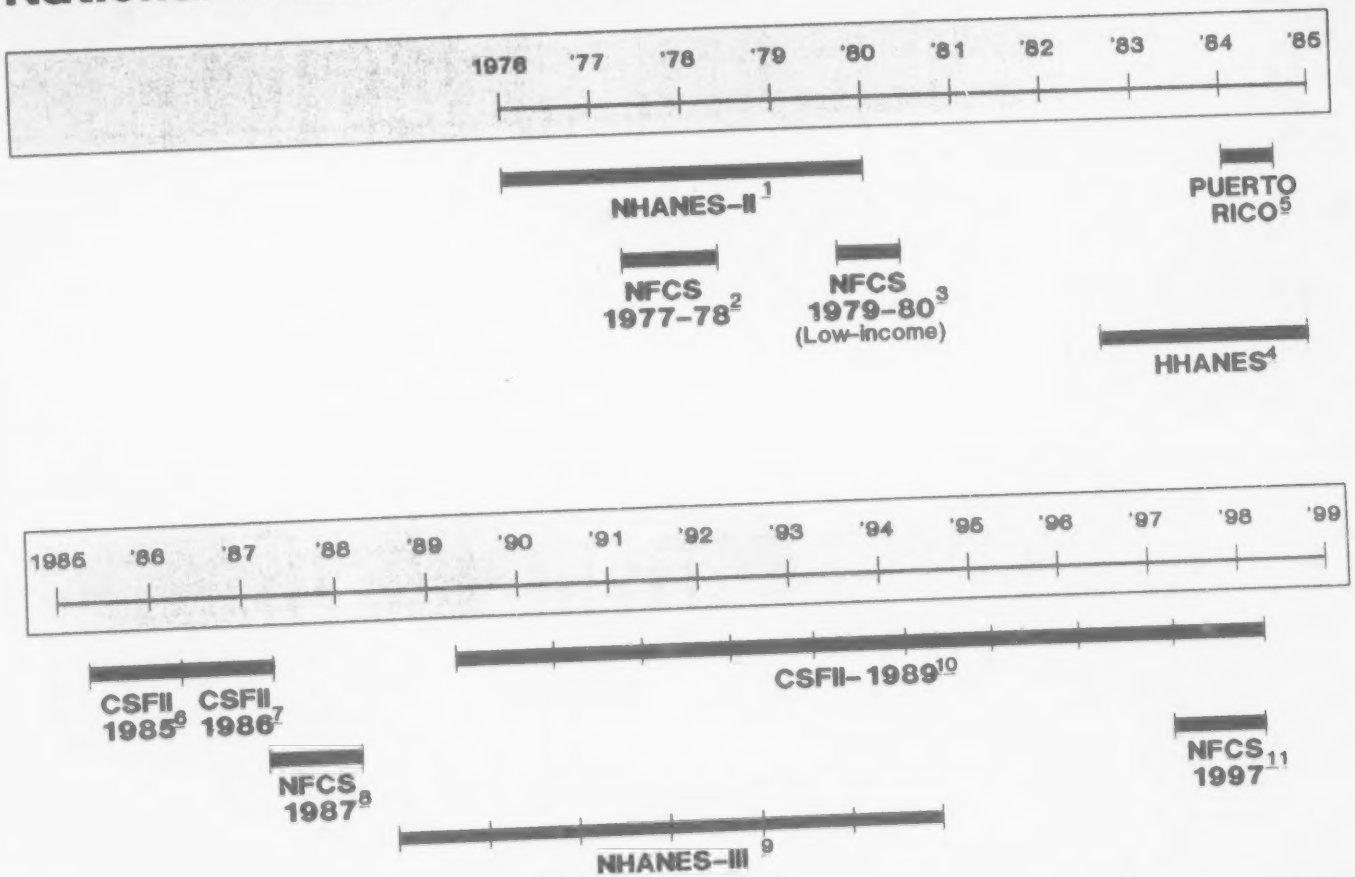
Mr. Chairman, thank you again for giving me the opportunity to speak with you today. I would be happy to respond to your questions.

Core Surveys
of the
National Nutrition Monitoring System

Attachment to
Testimony of James T. Heimbach
U.S. Department of Agriculture
before the
Senate Committee on Governmental Affairs

June 23, 1989

National Nutrition Monitoring Surveys



1/ NHANES II
Probability sample of the civilian, noninstitutionalized population of the U.S. aged 6 months through 74 years, 1 day individual dietary intake.

2/ NFCS 1977-78
Basic -- Stratified probability sample of all private households in the conterminous U.S.; all ages, household food use and 3 days individual dietary intake.

Low-Income -- Stratified disproportionate probability sample of the low income (eligible for food stamps) of all private households in the conterminous U.S.; all ages, household food use and 3 days individual dietary intake.

Elderly -- List sample (provided by Social Security Administration) of individuals 65+ years of age; household food use and 1 day individual dietary intake.

Alaska -- Stratified area probability sample (urban only) of all private households; all ages, household food use and 3 days individual dietary intake.

Hawaii -- Stratified area probability sample of all private households; all ages, household food use and 3 days individual dietary intake.

Puerto Rico -- Probability sample of all private households; all ages, household food use and 3 days individual dietary intake.

3/ NFCS 1979-80
Low Income -- Stratified disproportionate probability sample of the low income (eligible for food stamps) of all private households in the conterminous U.S.; all ages, 3 days individual dietary intake.

4/ HHANES 1982-84
Three samples of Hispanic Americans; i.e., Mexican-Americans (five States in the Southwest), Cuban-Americans (Dade County, Florida), and Puerto Ricans (portions of New York, New Jersey, and Connecticut), aged 6 months through 74 years; 1 day individual dietary intake.

5/ NFCS Puerto Rico 1984
Stratified disproportionate probability sample of all private households; household only.

6/ CSFII 1985
Basic -- Stratified probability sample of all private households in the conterminous U.S. that contained one or more women who were 19 to 50 years of age and their children 1 to 5 years of age; up to 6 days of individual dietary intake.

Low Income -- Stratified probability sample of all private households (at or below 130 percent of poverty) in the conterminous U.S. that contained one or more women who were 19 to 50 years of age and their children 1 to 5 years of age; up to 6 days of individual dietary intake.

Men -- Stratified probability sample of all private households in the conterminous U.S. that contained one or more men who were 19 to 50 years of age; 1 day of individual dietary intake.

7/ CSFII 1986
Basic -- Same as 1985
Low Income -- Same as 1985

8/ NFCS 1987
Basic -- Stratified probability sample of all private households in the conterminous U.S.; all ages, household food use and 3 days individual dietary intake.

Low Income -- Stratified probability sample of all low-income (130 percent of poverty or less) private households in the conterminous U.S.; all ages, household food use and 3 days of individual dietary intake.

9/ NHANES III, 1988-94 -- Probability sample of the civilian, noninstitutionalized population of the U.S. aged 2 months plus; 1 day individual dietary intake.

10/ CSFII 1989+
Basic -- Stratified probability sample of all private households in the conterminous U.S.; all ages, 3 days of individual dietary intake.

Low Income -- Stratified probability sample of all low-income (130 percent of poverty or less) private households in the conterminous U.S.; all ages, 3 days of individual dietary intake.

Data from the CSFII-89+ samples will be reported using a cost-efficient moving-average approach. The first data will be reported following the 1990 data collection.

Low-Income Elderly (planned for 1991) -- Stratified probability sample of all private households (at or below 130 percent of poverty) in the conterminous U.S. that contain one or more persons 65+ years of age; 3 days of individual dietary intake.

11/ NFCS 1997 (planned) -- Same as NFCS 1987.

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Office of the Assistant Secretary
for Health
Washington DC 20201

STATEMENT

BY

J. MICHAEL McGINNIS, M.D.

DEPUTY ASSISTANT SECRETARY FOR HEALTH

(DISEASE PREVENTION AND HEALTH PROMOTION)

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

BEFORE THE

COMMITTEE ON GOVERNMENTAL AFFAIRS

UNITED STATES SENATE

June 23, 1989

Mr. Chairman, I am Dr. J. Michael McGinnis, Deputy Assistant Secretary for Health for Disease Prevention and Health Promotion with the Public Health Service of the U.S. Department of Health and Human Services, and Chairman of the Department's Nutrition Policy Board. I appreciate this opportunity to discuss with you progress we are making in monitoring the nutritional status of the United States population and in providing timely dietary guidance related to disease prevention and health promotion.

My testimony today will (1) provide a brief overview of DHHS nutrition monitoring activities, (2) highlight several activities with particular relevance for methodological research that have gotten underway since I last testified before this Committee in March 1988, and (3) review ways we coordinate nutrition monitoring and dietary guidance efforts.

Nutrition Monitoring in DHHS

The National Nutrition Monitoring System (NNMS) is a complex assortment of interconnected activities that provide regular information about the contribution of diet and nutritional status to the health of the American people, and about factors affecting diet and nutritional status. The goals of the NNMS are included in the "Operational Plan for a National Nutrition Monitoring System," submitted to Congress in 1987. The Operational Plan is an updated version of the 1981 Implementation Plan.

Achievement of the plan's goals and increasing the overall effectiveness and productivity of nutrition monitoring efforts are the responsibility of the government-wide Interagency Committee on Nutrition Monitoring (ICNM). The ICNM is co-chaired by the Assistant Secretary for Health, DHHS, and the Assistant Secretary for Food and Consumer Services, USDA, whose surveys form the cornerstone of the monitoring system and who have oversight responsibility for implementation of NNMS activities. The

ICNM was established in June 1988, giving formal status to what had previously been managed through informal working groups and channels.

I will highlight several DHHS programs that contribute to this system. An inventory of the programs included in the NNMS will be published later this summer, the first product of the ICNM.

Centers for Disease Control: Within the Centers for Disease Control (CDC), two centers have major nutrition responsibilities. The first is the National Center for Health Statistics (NCHS). As the Federal government's principal health statistics agency, NCHS conducts a broad program of data collection and interpretation on all aspects of health, including nutrition. A number of NCHS data systems provide nutrition-related information from personal interviews, examinations, epidemiologic follow up, and review of health care provider and vital records systems. The major nutrition program of NCHS is the National Health and Nutrition Examination Survey (NHANES), which together with USDA's Nationwide Food Consumption Survey forms the cornerstone of the National Nutrition Monitoring System. It also serves as the vehicle for other epidemiologic studies and methodological research. The third National Health and Nutrition Examination Survey (NHANES III), which I will describe in more detail later, began in October 1988.

The second CDC component is the recently formed Center for Chronic Disease Prevention and Health Promotion (CCDPHP). This center continues the CDC tradition of working with States to package readily available data in a way that is useful for nutrition monitoring at the State level through the Pregnancy Nutrition Surveillance System and the Pediatric Surveillance System. These systems monitor the nutritional status of high-risk pregnant and pediatric populations, respectively. Forty States participate in the

Pediatric Surveillance System, and 14 in the Pregnancy Surveillance System. These systems provide information about the prevalence of overweight, underweight, retarded linear growth, and anemia among high-risk children. Among women, surveillance data are collected in regard to anemia, abnormal weight changes during pregnancy, birth weight of the child, and whether breast or bottle feeding is used and for how long.

Since 1984, CDC has conducted the State-based Behavioral Risk Factor Surveillance System that routinely collects data on the prevalence of behavioral risk factors associated with premature death and disability. These include nutrition-related risk factors such as obesity, hypertension, excessive alcohol consumption, and lack of physical exercise. Thirty-six States participate in the Behavioral Risk Factor Surveillance System. The information obtained from the States is provided back to them for their use in program planning and monitoring of trends.

A new initiative, Surveillance of Severe Pediatric Undernutrition, is testing the feasibility of collecting information on cases of severe pediatric undernutrition in collaboration with four State health departments. I will describe it later.

Food and Drug Administration: The Food and Drug Administration (FDA) generates data as part of the NNMS. These data are used by the Department to develop and evaluate food and nutrition policies at the agency and departmental levels. Programs of the FDA provide information on the safety of the food supply; surveillance for adverse reactions to foods; and public attitudes, knowledge, and practices about food and nutrition. The Total Diet Study monitors on an annual basis the levels in representative diets of various food contaminants and selected nutrients (such as pesticides, heavy metals, and essential trace elements). Through

the Diet and Health Survey, FDA periodically surveys the public's attitudes and knowledge of nutrition-related health problems such as hypertension, hypercholesterolemia, coronary heart disease, and cancer. The Food Label and Package Survey (FLAPS) monitors industry labeling practices on a biennial basis, with emphasis on trends in nutrition labeling and declarations of specific nutrients of public health concern such as sodium, fatty acids, and cholesterol.

The FDA not only contributes data to the NNMS through its surveys. It also helps to plan, analyze and interpret other major surveys of the NNMS in order to obtain information about Americans' intake of foods, food components, and supplements; their health and nutritional status; and the relationship of diet to health. FDA uses the information gained through many surveys in the NNMS to monitor trends in exposure to both beneficial and harmful substances in food, and to evaluate the need for revisions in food fortification, labeling, and food safety policies. Regular funding support is also provided to several health surveys conducted by CDC's National Center for Health Statistics.

National Institutes of Health: NIH is the major agency in the Federal government that supports nutrition research and training as it relates to health maintenance, human development, disease prevention, and disease treatment--$261 million in Fiscal Year 1987. The NIH and its Clinical Nutrition Research Units and Centers support and conduct research on nutritional status assessment and epidemiological nutrition research. Fiscal Year 1987 expenditures for these two categories were $27 and $29 million, respectively. NIH studies to develop improved methods of measuring dietary intake, biochemical and clinical indices of nutritional status, and other monitoring-related research are integrated into existing nutrition monitoring programs such as NHANES. In addition to this

methodological support, the NIH continues to provide yearly funding for NHANES, for example it provided an estimated $2.4 million in Fiscal Year 1988. The NIH performs follow-up studies using NHANES data in order to test hypotheses about the relationship of dietary practices to the incidence of diseases and conditions such as cancer, cardiovascular disease, obesity, and osteoporosis, as well as to study the effect of diet on overall health and longevity. Results of surveys conducted by the NIH on dietary and health practices and attitudes have contributed to the development of nutrition education materials and information dissemination to health professionals and the public. The nutrition research efforts and education programs of the NIH are coordinated through the NIH Nutrition Coordinating Committee in the Division of Nutrition Research Coordination.

NIH, through the Division of Nutrition Research Coordination, also serves as the executive secretariat for the Interagency Committee on Human Nutrition Research (ICHNR), and in that capacity maintains the Human Nutrition Research Information Management (HNRIM) System. The Sixth Progress Report on the HNRIM System has just been completed, and I would like to submit it for the record. This report contains Federal nutrition research and training expenditures by agency using a common definition of human nutrition research agreed upon by the ICHNR.

Recent DHHS Nutrition Monitoring Activities with Methodological Research Components

Third National Health and Nutrition Examination Survey: NHANES is the latest of a series of studies involving health and dietary interviews, physical examinations, and diagnostic and biochemical testing of a representative sample of Americans. NHANES III has two primary nutrition objectives: first, to provide data for the monitoring of nutritional

status, including tracking of nutrition-related risk factors and estimation of the prevalence of compromised nutritional status; and second, to provide information useful for studying the relationship between diet, nutritional status, and health.

NHANES III is a truly collaborative study conducted by NCHS with the programmatic and resource support of more than a dozen agencies, centers, and institutes throughout the Federal government. The content of the nutritional component of NHANES III was planned with recommendations and assistance from a variety of sources and recommendations and suggestions of topics for inclusion were solicited throughout the Federal government and from nutrition researchers and other data users outside of the government.

NHANES III represents an improvement over earlier surveys. New features include a longitudinal component that will allow follow-up and possible reexamination; automated data collection; and long-term biological specimen banking. These features will increase the scientific yield from the survey and will allow for greater timeliness and responsiveness. In addition, the age range of the NHANES sample has been extended to include persons ages two months and above. Special sampling of infants, children, the elderly, and minority groups such as blacks and Mexican-Americans will also permit estimates of the health and nutritional status of these groups.

The nutrition component of NHANES III includes body measurements, blood tests for selected indicators of nutritional status, and food frequency and 24-hour dietary recall methodologies that will be used to determine the nutritional status and dietary intake of the population. Interviews also include questions about factors that may influence nutritional status such as meal program participation, the nature of home

water supply, history of anemia, infant feeding practices, use of vitamin/mineral supplements, and eating habits and lifestyles.

Because of the growing interest and concern about food security, several groups recommended that NCHS develop and test methods for relating this issue to health. These included the President's Task Force on Food Assistance and a report on "Hunger Surveys in the United States," sponsored by the University of California at Berkeley. NCHS developed and rigorously tested a number of food security questions that were modeled on the one used in USDA surveys and those used in the Connecticut Childhood Hunger Identification Project. The revised questions were incorporated into the NHANES III, and, once the data are collected and analyzed, they will provide a unique opportunity to relate food security responses to detailed nutritional and health status measurements.

Surveillance of Severe Pediatric Undernutrition: The Centers for Disease Control has initiated a pilot surveillance activity in four States collecting information on severe pediatric undernutrition. Conducted in cooperation with State health departments in Florida, Mississippi, Louisiana, and Massachusetts, this surveillance activity collects nutritional status data from a variety of health care providers in selected urban and rural sites in each State. Data are collected from hospital inpatient wards, outpatient clinics, emergency rooms, health management organizations, and from such non-medical sources as day care centers and preschools in high-risk areas. Cases are identified on the basis of documented underweight, severe anemia, or clinical malnutrition. Each potential case identified is followed up to confirm the diagnosis and a questionnaire is administered detailing the child's health history, home and caretaking environment, and participation in food and nutrition programs. Food security questions are also included in the questionnaire.

These ask whether the child or family has taken meals in a soup kitchen or family shelter or has had to skip meals because of lack of resources to buy food. In cases where resources have been inadequate to provide food, the specific circumstances are further documented. Follow-up is undertaken to assure that appropriate medical and social services are provided. Data collection from the Surveillance of Severe Pediatric Undernutrition study is just beginning, and results will be available in 1990.

This surveillance mechanism is intended to serve as a model that could be utilized by other States and localities to better define the prevalence of severe undernutrition cases in high-risk populations, to define the risk factors that may explain the occurrence of these cases, and to arrange for appropriate intervention and follow-up. The results of these pilot surveillance activities should provide insights into the association of food security responses on the questionnaire and the nutritional status of the children. Since the questionnaire is only administered to the caretakers of children who meet the case criteria for severe undernutrition, these data will not provide a statistically adequate basis from which to relate food security to nutritional status in the general or entire low-income population.

Development of a Core Set of Indicators to Assess Nutritional Status of Low-Income Populations: A recent assessment of DHHS nutrition surveys and surveillance activities related to low-income populations concluded that measurement of nutritional status is constrained because there is no set of agreed upon core indicators of nutritional status that would enable comparison of findings from the variety of DHHS data sources. For example, a consistent set of core indicators of health and nutritional status could be put into surveys, incorporated into DHHS initiatives and programs, and used in specific settings by private, State, and local agencies. This

would lead to improved assessment and monitoring of the nutritional status of low-income groups.

Although such efforts have been undertaken on a smaller scale in developing countries, to our knowledge none has been proposed for application to the U.S. population. As a step toward alleviating this constraint, in October 1988, the Public Health Service (PHS) under the auspices of the DHHS Nutrition Policy Board, began a two-year cooperative agreement with the American Institute of Nutrition (AIN) to develop a set of nutritional status indicators applicable for use in field settings and as part of DHHS programs. The American Institute of Nutrition is the principal professional organization of nutrition research scientists in the United States, and has assisted Federal agencies to address nutrition-related questions and demonstrated a continuing interest in survey methods and analysis of data obtained by surveillance systems. We look forward to this set of indicators and to their testing and incorporation at appropriate times in the revision of ongoing monitoring activities and the initiation of new ones.

Management and Coordination of Nutrition Monitoring Activities

DHHS' nutrition monitoring activities serve a variety of purposes, with each activity meeting an agency-specific objective as well providing information needed by a broader audience. Thus, coordination of our activities to ensure optimal relevance is critical. And although there is always room for improvement, we have found that the information generated by the Department's surveillance and monitoring systems is useful. The descriptive information helps in program planning at both the State and Federal levels by contributing to our understanding of the nature and magnitude of nutrition-related health problems in the population. Surveys

such as NHANES provide national reference data that can be used as bench marks for smaller studies and in clinical practice. One of the best examples of this application is provided by the NCHS/CDC Growth Charts that are used to monitor the growth of children both here and abroad. The data from this survey are also vital to assessing the need for changes in fortification policies and other regulatory activities which assure the nutritional quality of the food supply. Finally, the surveys conducted by the monitoring system can be used in epidemiologic research to study the relationships among diet, nutritional status, and disease.

Nutrition monitoring programs in DHHS, though decentralized, are linked and coordinated through interagency mechanisms, at the policy level by the DHHS Nutrition Policy Board. Participation of each of the PHS agencies in the planning for NHANES III is one example of the depth of interagency collaboration within DHHS. The Interagency Committee on Nutrition Monitoring, which I mentioned earlier, is the mechanism for coordination across the NNMS. This committee, which has the specific mandate to increase the effectiveness and productivity of the NNMS, is addressing its task through four working groups: survey complementarity, food composition data base, and user liaison (including Federal and State relations). It works closely with the Interagency Committee on Human Nutrition Research.

Over the last several years in response to the interest of both the Congress and our own nutrition researchers, we have made concerted efforts to broaden collaboration and coordination between DHHS and USDA--particularly between NCHS and USDA's Human Nutrition Information Service (HNIS), managers of the two primary nutrition survey programs. NCHS and HNIS interaction now includes: regular coordinating committee meetings to address technical issues, agreement to base the surveys of both agencies on

the USDA Nutrient Data Bank, and dealing with a wide range of comparability issues between their respective surveys.

On a broader scale, DHHS and USDA are jointly sponsoring a contract to the Life Sciences Research Office of the Federation of American Societies for Experimental Biology for a scientific evaluation of nutrition monitoring data that will lead to the second report to Congress on nutrition monitoring, to be completed later this year. Management of this project is under the direction of a joint steering committee with representatives of all major nutrition monitoring data generators and users in both departments. USDA provided the Executive Secretariat for the development of the first report, and DHHS is providing the Executive Secretariat for the current project.

In short, we have devoted a great deal of effort to establishing mechanisms to improve coordination of the National Nutrition Monitoring System, and have now moved to address substantive issues. In many respects, we have been successful. Regular interchange between staff and managers of DHHS and USDA nutrition monitoring programs has led to better joint planning efforts, and surveys have been made more comparable. Many of the steps proposed in S. 253* and other legislation have been taken, and other improvements will be pursued in the future.

Coordination of Dietary Guidance Information

DHHS is committed to providing scientifically accurate, consistent dietary guidance to the population using the principles embodied by the Dietary Guidelines for Americans, and was, in fact, the major drafter of the first Dietary Guidelines for Americans issued in 1980, and is a partner

---

*S. 253 and its House companion HR. 677 are identical to S. 1081, legislative pocket vetoed by President Reagan November 8, 1988.

in the preparation of the 1985 revision and in work currently underway to prepare a 1990 edition. The procedures designed to achieve that commitment through coordination of dietary guidance information and publications within DHHS and with USDA are described in the following paragraphs.

Intra-Department Coordination: Dietary guidance coordination within DHHS is the responsibility of the DHHS Nutrition Policy Board Subcommittee on Dietary Guidance, described in the following paragraphs. All agencies within the department are expected to adhere to the procedural rules governing operation of the subcommittee. The Subcommittee was established in 1987 under the aegis of the DHHS Nutrition Policy Board to:

- coordinate DHHS agency activities that offer dietary guidance information targeted to the healthy American population,
- ensure the consistency of such activities, when appropriate, with the principles established in the Dietary Guidelines for Americans,
- encourage development of coordinated DHHS positions on dietary guidance,
- increase levels of cooperation and coordination between DHHS and USDA in order to facilitate consistency in dietary guidance from Federal sources,
- and exchange information on ways to improve the effectiveness of dietary guidance publications (Subcommittee on Dietary Guidance, Mandate and Procedures).

Each DHHS agency administers a mechanism for review of its dietary guidance materials. Those proposed materials that depart substantively from the Dietary Guidelines for Americans must be submitted to the Subcommittee for a priori review. The Subcommittee is chaired by the DHHS Deputy Assistant Secretary for Health (Disease Prevention and Health Promotion). Membership includes representatives from DHHS agencies that produce dietary guidance information as well as a liaison representative from USDA.

Inter-Department Review: Cross-representation structured into the operation of the DHHS Nutrition Policy Board Subcommittee on Dietary Guidance and into its counterpart at USDA, the USDA Dietary Guidance Working Group, constitute the principal mechanism for coordination between the departments. In addition, the USDA/DHHS Nutrition Education Committee for Maternal and Child Nutrition publications promotes joint efforts between USDA and DHHS on educational materials related to maternal and child nutrition in order to assure consistency of content, to avoid duplication, and to make more effective use of resources. The chairs of this committee sit on the Subcommittee on Dietary Guidance or the USDA Dietary Guidance Working Group.

In summary, we are proud of our accomplishments in promoting excellence in our nutrition monitoring and dietary guidance activities and their coordination, and we look forward pursuing these efforts even more intensely in the future. Mr. Chairman, I appreciate your interest and that of your Committee in this area, and I thank you for the opportunity to speak with you today.

In this regard, let me note this Administration's continued opposition to S. 253 and its House companion bill HR. 677. The Administration will also object to H.R. 1608, a bill introduced by House Agriculture Chairman E. de la Garza, unless certain modifications are accomplished, most importantly the removal of the bill's single Secretary veto provision concerning issuance of dietary guidance.

DIET AND HEALTH
IMPLICATIONS FOR REDUCING CHRONIC DISEASE RISK

Testimony of
Dr. Sushma Palmer
Director
Food and Nutrition Board
National Academy of Sciences

Before the
Committee on Governmental Affairs
United States Senate
Dirksen Senate Office Building
Washington, D.C.

June 23, 1989

I appreciate the opportunity to discuss the recent National Research Council report on Diet and Health and comment on its implications for nutrition monitoring in the United States. The National Research Council is the operating arm of the National Academies of Sciences and Engineering.

The evidence on the relationship between diet and chronic diseases has been mounting for several decades. Today, five of the 10 leading causes of death in the U.S. are linked to diet. The major chronic diseases in which studies have shown a relationship to diet include atherosclerotic cardiovascular diseases, hypertension, cancer, diabetes, obesity, osteoporosis, dental caries, and chronic liver diseases.

In the past 2 decades, the American public has been confronted with an abundance of dietary advice on how to reduce the risk of various chronic diseases. Some of this advice has been conflicting and confusing. Therefore, the National Research Council undertook an indepth study to evaluate and integrate all the scientific evidence on diet and chronic diseases. The major objective of our study was to provide a sound basis for giving the public a coherent and consistent message about ways to cut down on the risk of the whole spectrum of these potentially fatal diseases.

Beginning in 1985, an expert committee of the National Research Council reviewed nearly 6,000 reports of epidemiological data, clinical studies, and laboratory experiments involving both humans and animals. We deliberated intensively, consulted widely with other scientists, and received testimony from government agencies, the food industry, and consumer groups. On March 1, we issued a 1,300-page report entitled, Diet and Health: Implications for Reducing Chronic Disease Risk.

The report arrives at two major overall conclusions: First, that diet does indeed influence the risk of several chronic diseases. The evidence is very strong for atherosclerotic cardiovascular diseases and hypertension, and somewhat less strong for several forms of cancer. Diet also plays an important role in dental caries, liver disease, obesity, and indirectly in diabetes, but its role in other conditions we studied is less certain.

Our second major conclusion was that most chronic diseases associated with diet also have genetic determinants that interact with various environmental factors such as

diet. Even though diet clearly plays a major role, however, for most diseases we are unable to precisely quantify its effect or to forecast how much the risk can be reduced by changing eating habits. Nevertheless, our expert committee concluded that these risks can be significantly reduced by dietary changes.

Based on these and 60 other specific conclusions, we proposed 9 dietary recommendations for adults and children above the age of 2 years. The details of these recommendations and their scientific basis is contained in the report. Because my comments will be brief, I request that the 21-page summary of the Diet and Health report be entered into the hearings record.

In essence, we recommend a dietary pattern that is moderate in total and saturated fat, high in complex carbohydrates and fiber, low in salt and added sugars, and moderate in protein, especially animal protein. This means that most Americans would need to select leaner meats and trim off excess fat, and select low-fat or non-fat milk and cheeses. They would also need to eat more servings of cereals, breads, and legumes, as well as of vegetables and fruits, especially green and yellow vegetables and citrus fruits. And they would need to use less oil and fat in cooking, avoid fried foods, and eat less sugar.

Most Americans would also need to restrict their consumption of egg yolks; salt; salty, smoked, and preserved foods; and alcoholic beverages; and pay more attention to how food is cooked and processed. It is also important that people read labels on prepared, formulated, and other processed foods, particularly to look for salt, fat, and sugar content.

Using the current U.S. average diet as a standard, following our dietary recommendations would require that the population reduce its fat consumption by approximately 18 percent, and saturated fat intake by 23 percent, and increase its carbohydrate consumption by 21 percent.

Although we made 9 dietary recommendations and emphasized that taken together they pose the greatest potential for reducing the risk of chronic diseases, we noted that reducing fat intake, especially saturated fat, is likely to have the most impact on public health. Our committee estimated that reducing fat, especially saturated fat and cholesterol intake, could reduce serum cholesterol

in the population by at least 10% -- i.e., from about 220 to about 200 mg/dl, and that this could reduce heart disease risk by about 20% in the population.

We were less certain about cancer risk, but we noted that potentially the benefit of dietary modification is substantial, because countries that follow dietary patterns similar to the ones our committee recommended, have about half the U.S. cancer rates for diet-related cancers.

In the final analysis, we concluded that our recommended eating pattern could significantly reduce the risk of several major chronic diseases without an increase in any major cause of death or disability.

These dietary recommendations have many implications for nutrition monitoring. How effectively can we monitor changes in the U.S. diet and assess the impact of our recommendations? The National Research Council Committee identified several gaps in the data base for assessing the association between dietary patterns and chronic diseases. They proposed research directions to enhance the data base and improvements in the nutrition monitoring system to track dietary intake patterns in the population.

For example, we noted that USDA's Nationwide Food Consumption Survey and the National Center for Health Statistics' National Health and Nutrition Examination Survey (NHANES) only provide cross-sectional, periodic data, and not longitudinal data. Therefore they are not suitable for studying causal relationships between diet and chronic disease. Examples of other methodological shortcomings are the possibility that many respondents in these surveys are under treatment for medical conditions at the time of the survey, and that they may have altered their dietary habits and biased the results; and certain measurements or methods used in these surveys are inappropriate for studies of diet and chronic diseases. For example, biochemical measurements are usually evaluated in NHANES according to specified cutoff points, which are as inappropriate for studies of chronic diseases as they are for judging dietary adequacy.

Besides insufficient knowledge about diet and chronic diseases, such methodological shortcomings were the major barrier to our interpretation of data and derivation of precise conclusions about the association of diet and chronic diseases. Therefore, our expert committee recommended that high priority be given to development of better methods to monitor and quantify dietary exposures in human populations. This includes improvement in food

composition data for both nutritive and nonnutritive substances (especially fiber and microconstituents), methods for more frequent and long-term monitoring of dietary intake, and better methods to quantify dietary intake, especially for energy and alcohol. In particular, the methodology of both surveys needs to be improved to permit assessment of the long-term health effects of dietary factors, both nutritive and nonnutritive. We also recommended development of better methods for data analysis from epidemiological studies.

The National Academy of Sciences' Food and Nutrition Board has studied many issues pertaining to nutrition monitoring and offered advice to federal agencies. In general, we note that regular monitoring of the food supply, of food intake and the health status of the U.S. population, and timely analyses and reporting of these data are essential to determining changes in eating patterns and comparing them with the federal agencies' Dietary Guidelines for Americans, dietary recommendations in the Surgeon General's Report on Nutrition and Health, and the quantitative Diet and Health Recommendations in the NRC report.

Finally, the Food and Nutrition Board recognizes the desirability of coordinating nutrition monitoring activities at the federal and state levels to assure continuous and timely reporting of data, regular interpretation of these data in the form of an annual or biennial report on the nutritional status of the U.S. population, and a mechanism for up-to-date and consistent dietary guidance to the public. The Food and Nutrition Board is prepared to assist in conducting such evaluations and providing periodic reports.

Thank you for inviting me to testify on this timely and important issue.

NATIONAL CATTLEMEN'S ASSOCIATION
1301 Pennsylvania Ave. N.W. • Suite 300 • Washington, D.C. 20004-1701 • (202) 347-0228
Headquarters:
5420 South Quebec Street • P.O. Box 3469 • Englewood, Colorado 80155 • (303) 694-0305

Testimony on Behalf of the

NATIONAL CATTLEMEN'S ASSOCIATION
THE AMERICAN FARM BUREAU FEDERATION
THE AMERICAN MEAT INSTITUTE
NATIONAL BROILER COUNCIL
NATIONAL MILK PRODUCERS FEDERATION
NATIONAL PORK PRODUCERS COUNCIL
UNITED EGG PRODUCERS

regarding

Nutrition Monitoring

before the

Senate Governmental Affairs Committee

submitted by

J. Burton Eller, Jr.
Senior Vice President, Government Affairs
NATIONAL CATTLEMEN'S ASSOCIATION

June 23, 1989

- -

The National Cattlemen's Association is the national spokesman for all segments of the beef cattle industry--including cattle breeders, producers and feeders. The NCA represents approximately 240,000 cattlemen. Membership includes individual members as well as 47 affiliated state cattle associations and 26 national breed associations.

Nutrition Monitoring Testimony

Thank you for the opportunity to testify on proposed nutrition monitoring legislation. I am representing the National Cattlemen's Association and a coalition of leading agricultural producer groups.

We supported nutrition monitoring legislation in the last Congress, and we support such legislation in the 101st Congress.

We support nutrition legislation for two basic reasons:

(1) First, the legislation would provide for a continuing National Nutrition Monitoring System. Such a system is needed in order to know and to understand the nutritional health of our nation. We need to know how we use food and how our food choices are changing. We need to know the nutritional status of the different segments of our society. Those of us concerned about food and our nation's health, including nutrition policy makers in Congress and the executive branch, must have accurate and timely information on which to base policies and programs. No decision can be any better than the underlying information.

(2) Second, the legislation would require use by agencies of accurate nutrition and nutrient data information. Agencies would be required to work in a coordinated way and to "speak with one voice" on matters of nutrition and diet advice.

We cannot have accurate and consistent nutrition and health advice unless those issuing the information all use the latest and most accurate data on the nutrient content of foods. Also, we cannot have accurate food and nutrient consumption survey information unless those running the surveys recognize and use accurate nutrient composition data.

We have seen evidence of potential and real health problems because of failure on the part of some to recognize and use all of the available data on nutrient needs and nutrient composition.

For example, we now know that many women, in efforts to cut back on fat intake, have reduced their red meat intake. They have not recognized that nutrient-dense red meat supplies relatively large amounts of biologically available iron and other essential nutrients. And they may be borderline or deficient in terms of iron intake. Computer analyses by USDA suggest that, in order to meet essential nutrient requirements while reducing fat intake as commonly recommended, it may be necessary for many women in particular to increase, not decrease, their intake of lean meat.

I mention all of this to illustrate the need for continuing development and dissemination of information on the nutrient content of foods as well as information on nutrition and health relationships.

In the absence of nutrition monitoring legislation, what has happened? We have a good example, from back in 1984, of what can go wrong. The National Cancer Institute, using out-of-date information on the fat content of foods, published a diet-advice pamphlet which would have misled the public in addition to doing livestock producers a disservice. Fortunately, the Administration and members of Congress intervened, and distribution of the error-filled pamphlet was stopped. Everyone agreed the pamphlet had to be reviewed by USDA before any more copies were distributed.

More recently, coordination within and among agencies and departments has improved. New data on the nutrient content of today's more closely trimmed beef is being incorporated into USDA's nutrient composition handbooks, and now, other agencies should routinely use such information.

The Food and Agriculture Act of 1977, designated USDA as the lead department in nutrition matters, while Health and Human Services (HHS) oversees work on diseases. Relationships between certain diseases and diet have become a major focus of the National Institutes of Health (NIH). All of this work should be better coordinated---which proposed legislation could help accomplish.

USDA and HHS jointly produce the Dietary Guidelines for Americans. But, except for that effort, there is not really a mandated, formal mechanism for coordination---although the two departments have worked together more closely recently.

Here are a few current examples of coordination: (1) Within USDA, a Dietary Guidance Working Group reviews dietary recommendations before they are issued, thus assuring that USDA speaks with one voice. (2) A USDA representative attends meetings of the dietary guidance subcommittee of the HHS Nutrition Policy Board, although this group does not review department materials prior to publication. (3) The NIH Nutrition Coordinating Committee has a subcommittee for nutrition education (under National Heart, Lung and Blood Institute leadership) which confers with USDA in order to ensure information accuracy. (4) Several departments and agencies have established a new Interagency Committee on Nutrition Monitoring.

All of these things can help achieve some of the objectives of nutrition monitoring legislation. But the achievements at this point depend primarily on the good will and efforts of individual agency personnel. We still do not have the formal mechanism and procedures that are needed to assure coordinated nutrition monitoring, development and across-the-board use of up-to-date nutrient composition information, and coordinated nutrition advice.

The long-term health and welfare of the public, not just the viability of agricultural producers, depend on Congress' passage of well designed nutrition legislation, and on the departments' and agencies' implementation of such legislation.

Thank you for your attention.

THE AMERICAN DIETETIC ASSOCIATION
216 WEST JACKSON BOULEVARD, SUITE 800
CHICAGO, ILLINOIS 60606-6995
312/899-0040

DIVISION OF GOVERNMENT AFFAIRS
1667 K STREET, NW
WASHINGTON, DC 20006
202/296-3956

TESTIMONY PRESENTED

by

DARLENE A. DOUGHERTY, MS, RD
PRESIDENT

of

THE AMERICAN DIETETIC ASSOCIATION

before the

SENATE COMMITTEE ON GOVERNMENTAL AFFAIRS

for a hearing on the

NATIONAL NUTRITION MONITORING
AND
RELATED RESEARCH ACT OF 1989

S. 253

342 Senate Dirksen Office Building
9:30 am
Friday, June 23, 1989

Introduction

Good morning Mister Chairman and members of the Committee on Governmental Affairs.

I am Darlene Dougherty, President of The American Dietetic Association (ADA). The American Dietetic Association promotes optimal health and nutritional status of the population through the provision of direction and leadership for quality dietetic practice, education, and research. On behalf of the more than 57,000 ADA members nationwide, I would like to thank you for the opportunity to address you today in support of Senator Bingaman's bill, S. 253, the *National Nutrition Monitoring and Related Research Act of 1989.*

Members of The American Dietetic Association integrate and translate food and nutrition science into dietary guidance and food choices for the public. Dietitians and other health professionals know how necessary it is to understand the nutritional status of individuals to make appropriate recommendations for change that will promote health and prevent disease. It is just as important to have a comprehensive picture of the nutritional status of the entire American population. Only in this way can programs meant to help people be designed to provide real solutions to national problems. Members of our Association are very much interested in having comprehensive, timely data that a coordinated, continuous national nutrition monitoring system will provide because they constantly use the data to better serve the public through food service, education, and research.

We support the goals of a national nutrition monitoring system, structured to meet the expanding needs of food, nutrition and health professionals, and state and local governments to determine agriculture, dietary, nutrition and health policy. It will provide information essential for the evaluation of the 1990 Health Objectives for the Nation, and the development and implementation of the Year 2000 Health Objectives for the Nation (1). In addition to The American Dietetic Association, there are many public health, scientific, professional, voluntary, consumer, anti-hunger, elderly, educational, religious, and state and local government groups who support the enactment of S. 253.

As the committee is aware, nutrition monitoring legislation received strong bipartisan support during the 100th Congress, but was pocket vetoed by President Reagan on November 8, election day. I had hoped that today's hearing would cover implementation of a nutrition monitoring system, not the continuing need to develop such a system.

The July 1988 *Surgeon General's Report on Nutrition and Health* identified gaps in our knowledge of nutrition that suggested future research and surveillance needs. One example cited as a

way to fill this information gap was the establishment of a nutrition surveillance system that would enhance the monitoring of population specific and state specific trends in the occurrence of nutrition related risk factors and conditions (2).

In the recently released report *Diet and Health: Implications for Reducing Chronic Disease Risk* released by the National Research Council in February 1989, similar recommendations were made concerning the need for better nutrition monitoring in the United States. Specifically, the report called for the development of better methods to monitor and quantify dietary exposures in human populations, development of better methods for data analysis for epidemiological studies, and additional techniques for assessing the mutagenic effects of chemicals on human cells in vivo, with application to assessing mutagenicity of diets (3). These recommendations from current reports underscore the need for improved coordination of current surveys, and the recommendations of these authoritative bodies are reflected in the provisions of S 253.

Background

Nutrition monitoring dates back to 1936 when the first household food consumption survey was conducted by the United States Department of Agriculture (USDA) (4). Nutrition monitoring was called for in the report of the 1969 White House Conference on Food, Nutrition, and Health. More recently, the Food and Agriculture Act of 1977 directed the Secretaries of Agriculture and Health, Education, and Welfare (now Health and Human Services, DHHS) to submit a proposal for a comprehensive nutrition monitoring system to Congress (5).

In 1978, the proposal for a comprehensive nutrition monitoring system was transmitted from USDA and DHHS to the Senate. In September, 1981, the USDA-DHHS Joint Implementation Plan for a Comprehensive National Nutrition Monitoring System was completed and delivered to Congress (6).

Current Status of the National Nutrition Monitoring System

The current status of nutrition monitoring activities as called for in the Joint Implementation Plan for a Comprehensive National Nutrition Monitoring System (Implementation Plan) are outlined in Table 1 and summarized below:

Coordination of the 1987 Nationwide Food Consumption Survey (NFCS) and the National Health and Nutrition Examination Survey (NHANES) III: Although the surveys will use the same food coding system and the same food composition data bases, they will not be conducted at the same time. NFCS began in 1987 and NHANES III in 1988. The agencies have missed the time frame to coordinate

the core data sets of the NNMS and will have to wait ten years until 1997 for the next opportunity to coordinate these surveys. Surveys in other USDA and DHHS branches currently have not been coordinated with the same data base.

The Implementation Plan also focuses on other interconnected elements: health status measurements, food consumption measurements, food composition measurements, dietary knowledge and attitudes assessments, and food supply determinations. In a 1982 report on the feasibility of coordinating the two surveys, the conclusion drawn by statisticians was that it would be impractical to combine the two surveys because of logistical drawbacks, but outlined several recommendations that could result in better coordination of surveys (7). These recommendations focused on the comparability of survey components, primarily in the areas of socio-economic and dietary data, and survey design components.

Timeliness of data collection: USDA has collected data through NFCS once every 10 years since 1965. Health and nutrition data collection through NHANES has been variable, with surveys conducted from 1971 to 1975 (NHANES), 1975 to 1980 (NHANES II), 1982 to 1984 (Hispanic HANES), and NHANES III which began in 1988. USDA's Continuing Survey of Food Intakes of Individuals (CSFII), which plans to provide data each year between NFCS 1987 and NFCS 1997, for the most part covers only women from 19 to 50 years, and children from 1 to 5 years. Food intake data of infants, men, and older Americans is not continuously collected, and different data sets exist for the groups that have been surveyed. Additionally, the CSFII has limitations in terms of the sampling methods used.

Timeliness of data release: The time between data collection, analysis and release has been a major problem for nutrition monitoring but recently has been improving. In the past, NFCS and NHANES data were generally considered preliminary until the next survey. Hispanic-HANES data (collected from 1982 to 1984) has only recently been made available. Reports and data tapes from the 1985 and 1986 CSFII (small, non-national samples) were released within 6 months after data collection (8). Efforts to improve data release must continue for timely and accurate formulation and evaluation of food and nutrition policy and programs.

Interpretation of monitoring data: The first report of the Joint Nutrition Monitoring Evaluation Committee, due to Congress in November 1984 (according to the 1981 Implementation Plan), was not released until July, 1986 (9). To remain on schedule with the original Implementation Plan, another report was due to Congress in 1987. This deadline has not been met although we are now well into

1989. USDA and DHHS contracted with the Federation of American Societies for Experimental Biology (FASEB) to create an Ad Hoc Expert Panel on Nutrition Monitoring to prepare the second report due to Congress, which hopefully will be released in 1989 (10).

Expanded usefulness of monitoring data: The usefulness of monitoring data is dependent upon its application to the general and specific populations in a timely manner. The availability of technical assistance and training for non-federal users, although improved, needs further expansion in data analysis and utilization; and, the development of a central focus for dissemination of data. Current food and nutrition policy for the American public is principally formulated with 1977 to 1978 NFCS and 1975 to 1980 NHANES II data. The 1984 President's Task Force on Food Assistance stated that food and nutrition investigations currently must use data that become available only after the urgency which prompted their need has passed (11).

Two areas not addressed in the Plan but needed are the stimulation of research to make monitoring techniques more effective and technical assistance to other federal agencies and non-federal users such as state and local governments. With the ever changing diet and health behavior of the public; food, nutrition, and health professionals require a nutrition monitoring system that provides timely, coordinated, and useful data and technical assistance for programming and policy formulation.

Cost of National Nutrition Monitoring

The cost of S. 253 will depend on the priorities selected and the level of effort each agency determines that it will accept in any fiscal year. The bill clearly states it does not authorize the appropriation or require the expenditure of any funds in excess of the amount that would be authorized or expended for the same purposes in the absence of the coordinated program. Moreover, improved coordination of monitoring efforts should make more effective use of federal expenditures and thereby result in cost savings. Also, S. 253 will provide policy-makers with a rational basis for allocating scarce resources.

Additionally, the bill calls for the use of cost-recovery management techniques and imposes charges and fees for publications of the coordinated program to supplement the resources provided by the federal government. Finally, there is the long-term cost savings that would result from a sound nutrition monitoring system. More timely and better coordinated data collection and analysis would be invaluable in carrying out effective nutrition education and health intervention programs. The improved health that would result from these programs would save money both for the government and for the private sector (12).

Needs of state and local governments

Although the bill establishes a central federal focus for coordinating, managing and directing national monitoring activities, it provides assistance for states and localities to improve their nutrition monitoring efforts. The bill also directs the Secretaries and the Board to include in their program scientific and technical assistance to state and local governments in obtaining dietary and nutritional status data.

Current nutrition monitoring activities fall short of providing information on high risk groups such as the hungry, homeless, elderly, pregnant women and children. The Operational Plan for the National Nutrition Monitoring System, which shows some improvement over the Implementation Plan, does reveal major gaps. Nutritional status data on hungry and homeless persons is conspicuously absent from the current system.

The Centers for Disease Control Pregnancy and Pediatric Nutrition Surveillance Systems, for example, are not conducted in all states. Public Health Nutritionists and Public Health Administrators in state government have stated that it is becoming more difficult to initiate these Systems in states because fewer funds are committed to nutrition. The CDC surveillance systems, although very useful, provide data that primarily represents participants (at least 80%) in the Special Supplemental Food Program for Women, Infants and Children (WIC). Therefore, this data does not reflect the nutritional status of non-WIC participants (13).

The elderly population in American is growing rapidly. It is critical that nutritional status data is available to nutrition and dietetic professionals to develop educational programs and provide dietary guidance. NHANES only samples individuals up to age 75. While there is a large body of information on technological advances in medicine to increase lifespan, current monitoring systems do not provide health and nutritional status data on this increasingly important segment of the population.

Scientific research and development; improving technology transfer

For the purpose of developing better and less costly methods of data collection, the bill requires the Secretaries of USDA and DHHS to coordinate the conduct of such scientific research necessary to support the NNMS in the areas of methods research and in coordination of research among federal agencies. With all the technological innovation we hear about every day in the areas of space launches, etc. surely there are less invasive, more precise and less costly methods that could be developed to

determine dietary intake and nutritional status. We think this special grants program could and should encourage this kind of research.

At previous hearings on nutrition monitoring, there was a consensus from Administration representatives and scientific experts that more funds need to be appropriated for basic nutrition research. Research related to nutrition monitoring should be a component of basic nutrition research and is a necessary component of a cost effective, efficient national nutrition monitoring system.

Title II: National Nutrition Monitoring Advisory Council

ADA supports the formation of the Advisory Council because currently there is little outside input going to the agencies. The Advisory Council as provided in the legislation will provide an objective perspective to the system that currently does not exist. The legislation is very specific about the membership of the interests and perspectives on nutrition monitoring to serve on the Council. The Advisory Council is designed to not only examine whether the stated objectives are being met, but also the capacity of the program and plan from a scientific and technical standpoint to address the fundamental questions that exist on diet, nutrition, and health status in the nation.

The need for an advisory panel has been identified by nutrition monitoring supporters as one of the most important provisions in the legislation to provide the scientific and technical advice, expertise, and on-going review and refinement support presently not available from federal agencies involved with nutrition monitoring activities (4).

Title III: Dietary Guidance

The American Dietetic Association is most pleased to have been a part of the long negotiations that produced Title III of this bill. We worked long and hard with representatives of other public health groups, commodity organizations, public interest groups, and Congressional staff in producing this provision. We believe that under this Title, dietary recommendations made by government agencies will be based on sound, scientific evidence; receive the appropriate peer review; and, allow the government to speak with one voice on dietary recommendations.

In brief, Title III of the legislation requires any federal agency wishing to issue dietary guidance to submit that recommendation to both Secretaries of DHHS and USDA for review before its issuance. If both Secretaries find the guidance to be based upon scientific evidence, the recommendation may be immediately issued. When there is disagreement, a notice of the proposed guidance is to be published

in the Federal Register with a public comment period. It is our hope that this public comment period will provide federal agencies with access to the acquired knowledge of experts throughout the country.

I should add that Title III also requires federal agencies to review the DHHS/USDA document *Dietary Guidelines for Americans* at least every five years.

Closing

The Act takes the resources currently used for nutrition monitoring and directs that they be used in a coordinated and more cost-effective manner. Without a comprehensive nutrition monitoring system, we will continue to be faced with the same problems in determining the nutritional status of both high-risk and healthy Americans. I hope that S. 253 will be promptly reported out of the Committee on Governmental Affairs and enacted into law this year. I thank the Committee on Governmental Affairs for the opportunity to express the views of The American Dietetic Association on the *National Nutrition Monitoring and Related Research Act of 1987.*

References

(1) Promoting Health, Preventing Disease: Objectives for the Nation. Washington: US Department of Health and Human Services, 1980.

(2) US Department of Health and Human Services, Public Health Service. Surgeon General's Report on Nutrition and Health. Washington: Government Printing Office, 1988.

(3) National Academy of Sciences, National Research Council, Committee on Diet and Health, Food and Nutrition Board, Institute of Medicine. Diet and Health: Implications for Reducing Chronic Disease Risk. Washington: National Academy Press, 1989.

(4) Porter, D.: A National Nutrition Monitoring System: Background and Bill Review Washington: Library of Congress, Congressional Research Service, 1989.

(5) P.L. 95-113. The Food and Agriculture Act of 1977, Sec. 1428, September 29, 1977.

(6) USDHHS and USDA: Joint Implementation Plan for a Comprehensive National Nutrition Monitoring System. Washington: US Departments of Agriculture and Health and Human Services (Unpublished report), 1981.

(7) Review of technical issues surrounding the coordination of NHANES and NFCS.Washington: US Department of Health and Human Services, 1982.

(8) Harris, S.: A nutrition monitoring update: A USDA perspective. J Am Diet Assoc 87: 583, 1987.

(9) Nutrition monitoring in the United States: A progress report from the Joint Nutrition Monitoring Evaluation Committee. Washington: US Departments of Agriculture and Health and Human Services (DHHS Publication No. (PHS) 86-1255), 1986.

(10) US Departments of Agriculture and Health and Human Services.: Scientific review of National Nutrition Monitoring System information and data; announcement of study; opportunities to provide data and information; open meetings; closed meetings. Federal Register, 52: 45504, 1987.

(11) Report of the President's Task Force on Food Assistance. Washington: President's Task Force on Food Assistance (Unpublished report), 1984.

(12) Shipley-Moses, E. and Dodds, J.: Nutrition Surveillance and Monitoring. J Nutr Ed 19: 125, 1987.

(13) Conversation with Agnes W. Hinton, Member of the USDA WIC Advisory Committee. March, 1988.

STATEMENT BY SENATOR PATRICK LEAHY AND SENATOR RUDY BOSCHWITZ

Patrick Leahy ON Rudy Boschwitz

THE NATIONAL NUTRITION MONITORING AND RELATED RESEARCH ACT

We are pleased to have the opportunity to express our support for the National Nutrition Monitoring and Related Research Act (S.253). As original cosponsors of this bill designed to monitor the nutritional health of Americans, we commend the Governmental Affairs Committee for holding this hearing today.

As Chairman of the Committee on Agriculture, Nutrition and Forestry, and ranking member of the Nutrition and Investigations Subcommittee, we are concerned that our present nutrition monitoring system does not adequately address the nutrition and health needs of Americans.

We worked hard last year with members of this Committee to get this bill passed by Congress, and we were very disappointed when the bill was vetoed last fall. This legislation enjoys broad bipartisan support from Congress. A wide range of organizations have joined together in support of this nutrition monitoring bill. Forty-five organizations, involved in health, nutrition and agriculture, enthusiastically support this nutrition monitoring bill. We commend them for the input they have provided in the development of this legislation.

Last fall, the Surgeon General of the United States released a major report to the President demonstrating the crucial interrelationships between diet and health. Included among the public policy recommendations proposed by the Surgeon General was the creation of a national nutrition surveillance system. This bill meets that important goal.

The Surgeon General's report carefully points out the roots of many potentially fatal and debilitating diseases begin in childhood. Coronary heart disease, hardening of the arteries, high blood pressure, cancer, dental and skeletal diseases, anemia, and a host of other diseases have roots in childhood malnutrition. Some of this is related to poverty. However, much of it is caused by improper diet. This nutrition monitoring bill will provide Congress, and the public, with important information on the nutritional health of Americans -- especially regarding the vulnerable groups such as the elderly, pregnant women, infants, young children and the homeless.

As strong supporters of our federal nutrition programs, we need accurate, timely data to determine how effective federal hunger programs are. While improvements in coordination of nutrition monitoring have been made in recent years, this legislation will strengthen the cooperation that has been developing between federal agencies. It creates a comprehensive and coordinated nutrition monitoring system to provide up-to-date information on our country's nutritional status.

This legislation will help us gather information by coordinating the efforts of the Department of Agriculture and the Department of Health and Human Services. This coordination will be achieved through a 10-year National Nutrition Monitoring and Related Research Program and an Interagency Board for Nutrition Monitoring. The purpose of this coordinated program is to continually assess the dietary and nutritional status of our nation's population. In addition, this legislation will provide for a National Nutrition Monitoring Advisory Council to provide scientific and technical advice on how to establish and coordinate a comprehensive plan.

The bill also requires that the Secretaries of Agriculture and Health and Human Services jointly issue and publish Dietary Guidelines for Americans at least every five years. Furthermore, the bill is designed to coordinate the efforts of federal agencies regarding dietary guidance. Any federal agency planning to issue dietary guidance would submit the proposed guidance to both Secretaries for review. A procedure is established for approval of the proposed dietary guidance by the Secretaries to assure consistency with the Dietary Guidelines for Americans.

We believe that this legislation will provide us with important tools to assess the nutritional status of Americans, particularly the effect of the federal nutrition programs, and ultimately help us design more effective programs to alleviate hunger and malnutrition.

We appreciate the Governmental Affairs Committee's support for this bill in the past and look forward to working with members of this Committee on this bill this year. We will continue to urge our Senate colleagues to support this important nutrition monitoring bill.

REP. SHERWOOD BOEHLERT (R-NY)
WRITTEN TESTIMONY FOR THE SENATE COMMITTEE ON GOVERNMENT AFFAIRS
THE NATIONAL NUTRITION MONITORING AND RELATED RESEARCH ACT OF 1989

June 23, 1989

Mr. Chairman:

Thank you for giving me the opportunity to submit this testimony on S. 253, the National Nutrition Monitoring and Related Research Act.
It's a shame, though, that this hearing is necessary. After many years of work, the bill finally was sent to the President last year, only to be vetoed.

The veto was based on grounds that can most kindly be described as specious.

President Reagan argued that the bill would create a "substantial amount of unnecessary and complex Federal bureaucracy." The President cited as evidence the creation of an administrator for nutrition programs -- which is entirely optional under the bill -- and the creation of an Advisory Council, which would do nothing more than provide advice to give the existing bureaucracy some idea of the impact its work is having in the "real world."

The President also claimed the bill would substantially raise expenditures for nutrition monitoring -- not an undesirable goal, but an inaccurate characterization of the measure. The bill explicitly states that it neither authorizes nor appropriates money to carry out any new programs.

What the bill would do is require comprehensive, coordinated planning of nutrition monitoring and readily available budget information on the programs. This would seem to be an unarguable requirement for any significant, multi-agency, complex task such as nutrition monitoring. Indeed, the agencies have recognized this and have improved their coordination -- at least in part in response to Congressional pressure.

The passage of time makes these nutrition monitoring programs seem ever more important. The more the science of nutrition expands the more we realize how much our diet influences our health. Truly, we are what we eat. We need to have up-to-date accurate, usable information on what Americans are eating and on how it is affecting us.

This bill is a perfectly reasonable, affordable planning tool. Unless we clearly set out our goals and requirements for the nutrition monitoring programs, we will never get the information we need to improve the health of the American public. Unless we develop a clear procedure -- as this bill does -- for the issuance of dietary guidance, the public will not take the information to heart.

I can only conclude as I did when this bill was on the floor last fall: "Congress has chewed over this bill for at least three Congresses and as a result its form has become more palatable to both this body and outside groups. It's time we finally made the commitment to good nutrition -- and swallow."

Thank you.

U.S. Department of Justice

Office of Legislative Affairs

Office of the Assistant Attorney General

Washington, D.C. 20530

JUL 21 1989

Honorable John Glenn
Chairman
Senate Committee on Governmental Affairs
Washington, D.C. 20510

Dear Mr. Chairman:

The following represents the views of the Department of Justice on section 201(a)(2) of S. 253, a bill "to establish a coordinated National Nutrition Monitoring and Related Research Program, and a comprehensive plan for the assessment of the nutritional and dietary status of the United States population and the nutritional quality of food consumed in the United States, with the provision for the conduct of scientific research and development in support of such program and plan." The Department of Justice defers to the Department of Agriculture and Health and Human Services as to the Administration's position on S. 253 as a whole. However, we have certain constitutional policy concerns about section 201(a)(2), which are set forth below.

The bill would require the Secretary of Agriculture and the Secretary of Health and Human Services to develop a coordinated program to maintain and improve the nutritional status of the people of the United States. Section 101. The bill further provides that the Secretaries implement a comprehensive research and monitoring plan that would include plans to assess, analyze, and report on the dietary and nutritional status of the United States population. Section 103. Title II provides that the President shall establish a National Nutrition Monitoring Advisory Council (Council), which would provide scientific and technical advice on the development and implementation of the coordinated program and comprehensive plan, and serve in an advisory capacity to the Secretaries.

Our concern arises from section 201(a)(2), which provides that the Council will consist of nine voting members, five to be appointed by the President and four to be appointed by Congress. We believe that this dual appointment power raises separation of powers concerns. Although the branches of government are not "hermetically" sealed from one another, Buckley v. Valeo, 424 U.S. 1, 121 (1976), the separation identity, and that functions be clearly assigned among the separate branches. Buckley v. Valeo, 424 U.S. at 120-124; INS v. Chadha, 462 U.S. 919, 951 (1983). Title II of the bill provides that the Advisory Council

is to advise heads of two executive branch departments, an action that clearly constituted an executive function. On the other hand, section 201(a)(2)B) provides that four Council members be appointed by Congress, rather than the President or another executive branch officer. We believe that under the most reasonable reading of the bill, Title II attempts to establish an executive branch advisory council. However, under the language of this bill, the Council is not clearly legislative or executive and would be in the difficult position of having to serve two masters.

We are advised by the Office of Management and Budget that there is no objection to the presentation of this report to Congress, and that enactment of section 201(a)(2) of S. 253 would not be in accord with the program of the President.

Sincerely,

Carol T. Crawford
Assistant Attorney General

Executive Summary

DIET AND HEALTH

Implications for Reducing Chronic Disease Risk

Committee on Diet and Health
Food and Nutrition Board
Commission on Life Sciences
National Research Council

NATIONAL ACADEMY PRESS
Washington, D.C. 1989

NATIONAL ACADEMY PRESS • 2101 CONSTITUTION AVENUE, NW • WASHINGTON, DC 20418

NOTICE: The project that is the subject of this report was approved by the Governing Board of the National Research Council, whose members are drawn from the councils of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine. The members of the committee responsible for the report were chosen for their special competences and with regard for appropriate balance. This report has been reviewed by a group other than the authors according to procedures approved by a Report Review Committee consisting of members of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine.

The National Academy of Sciences is a private, nonprofit, self-perpetuating society of distinguished scholars engaged in scientific and engineering research, dedicated to the furtherance of science and technology and to their use for the general welfare. Upon the authority of the charter granted to it by the Congress in 1863, the Academy has a mandate that requires it to advise the federal government on scientific and technical matters. Dr. Frank Press is president of the National Academy of Sciences.

The National Academy of Engineering was established in 1964, under the charter of the National Academy of Sciences, as a parallel organization of outstanding engineers. It is autonomous in its administration and in the selection of its members, sharing with the National Academy of Sciences the responsibility for advising the federal government. The National Academy of Engineering also sponsors engineering programs aimed at meeting national needs, encourages education and research, and recognizes the superior achievements of engineers. Dr. Robert M. White is president of the National Academy of Engineering.

The Institute of Medicine was established in 1970 by the National Academy of Sciences to secure the services of eminent members of appropriate professions in the examination of policy matters pertaining to the health of the public. The Institute acts under the responsibility given to the National Academy of Sciences by its congressional charter to be an adviser to the federal government and, upon its own initiative, to identify issues of medical care, research, and education. Dr. Samuel O. Thier is president of the Institute of Medicine.

The National Research Council was organized by the National Academy of Sciences in 1916 to associate the broad community of science and technology with the Academy's purposes of furthering knowledge and advising the federal government. Functioning in accordance with general policies determined by the Academy, the Council has become the principal operating agency of both the National Academy of Sciences and the National Academy of Engineering in providing services to the government, the public, and the scientific and engineering communities. The Council is administered jointly by both Academies and the Institute of Medicine. Dr. Frank Press and Dr. Robert M. White are chairman and vice chairman, respectively, of the National Research Council.

The study summarized in this publication was supported by funds from the National Research Council Fund, a pool of private, discretionary, nonfederal funds that is used to support a program of Academy-initiated studies of national issues in which science and technology figure significantly. The NRC Fund consists of contributions from a consortium of private foundations including Carnegie Corporation of New York, Charles E. Culpeper Foundation, William and Flora Hewlett Foundation, John D. and Catherine T. MacArthur Foundation, Andrew W. Mellon Foundation, Rockefeller Foundation, and Alfred P. Sloan Foundation; the Academy Industry Program, which seeks annual contributions from companies that are concerned with the health of U.S. science and technology and with public policy issues with technological content; and the National Academy of Sciences and National Academy of Engineering endowments. The study was also supported by W.K. Kellogg Foundation, The Henry J. Kaiser Family Foundation, Pew Charitable Trusts, Fannie E. Rippel Foundation, and Occidental Petroleum Corporation.

Copyright © 1989 by the National Academy of Sciences

No part of this book may be reproduced by any mechanical, photographic, or electronic process, or in the form of a phonographic recording, nor may it be stored in a retrieval system, transmitted, or otherwise copied for public or private use, without written permission from the publisher, except for the purposes of official use by the U.S. government.

Printed in the United States of America

Cover photographs:
Paul Robert Perry/UNIPHOTO (*black-eyed peas*); Peter Beck/UNIPHOTO (*fish*); Hanley and Savage/UNIPHOTO (*milk*); Peter Beck/UNIPHOTO (*fruit, vegetables*); Gordon E. Smith/UNIPHOTO (*bread*); Renee Comet/UNIPHOTO (*basket*).

This Executive Summary is available in limited quantities from the Food and Nutrition Board, 2101 Constitution Avenue, NW, Washington, DC 20418.

The complete volume of *Diet and Health: Implications for Reducing Chronic Disease Risk*, from which this Executive Summary is extracted, will be available Summer 1989 for sale from the National Academy Press, 2101 Constitution Avenue, NW, Washington, DC 20418.

COMMITTEE ON DIET AND HEALTH

ARNO G. MOTULSKY (*Chairman*), Center for Inherited Diseases, University of Washington, Seattle, Washington
EDWIN L. BIERMAN (*Vice Chairman*), Division of Metabolism, Endocrinology, and Nutrition, University of Washington School of Medicine, Seattle, Washington
DeWITT S. GOODMAN (*Vice Chairman*), Institute of Human Nutrition, Columbia University, New York, New York
DONALD B. McCORMICK (*Vice Chairman*), Department of Biochemistry, Emory University School of Medicine, Atlanta, Georgia
CLAUDE D. ARNAUD, JR., Endocrine Section, University of California, San Francisco, and Veterans Administration Medical Center, San Francisco, California
JOHN C. BAILAR III, Department of Epidemiology and Biostatistics, McGill University School of Medicine, Montreal, Quebec, Canada
HENRY BLACKBURN, Division of Epidemiology, School of Public Health, University of Minnesota, Minneapolis, Minnesota
GEORGE A. BRAY, Section of Diabetes and Clinical Nutrition, University of Southern California, Los Angeles, California
KENNETH K. CARROLL, Biochemistry Department, University of Western Ontario, London, Ontario, Canada
GEOFFREY R. HOWE, National Cancer Institute of Canada Epidemiology Unit, Faculty of Medicine, University of Toronto, Toronto, Ontario, Canada
LUCILLE S. HURLEY (deceased), Department of Nutrition, University of California, Davis, California
LAURENCE N. KOLONEL, Cancer Research Center of Hawaii, University of Hawaii, Honolulu, Hawaii
HENRY C. McGILL, JR., Southwest Foundation for Biomedical Research, University of Texas Health Science Center, San Antonio, Texas
ANTHONY B. MILLER, Department of Preventive Medicine and Biostatistics, University of Toronto, Toronto, Ontario, Canada
LOT B. PAGE, National Institute on Aging, Bethesda, Maryland
RICHARD M. SCHIEKEN, Division of Pediatric Cardiology, Medical College of Virginia East Hospital, Richmond, Virginia
RICHARD B. SHEKELLE, School of Public Health, University of Texas Health Science Center at Houston, Houston, Texas
LOUIS TOBIAN, JR., Hypertension Section, University of Minnesota Hospital School of Medicine, Minneapolis, Minnesota
ELEANOR R. WILLIAMS, Department of Human Nutrition and Food Systems, University of Maryland, College Park, Maryland

Adviser

PAUL D. STOLLEY, University of Pennsylvania, Department of Medicine, Philadelphia, Pennsylvania

Food and Nutrition Board Liaison

WILLIAM E. CONNOR, Department of Medicine, Oregon Health Sciences University, Portland, Oregon
M.R.C. GREENWOOD, Department of Biology, Vassar College, Poughkeepsie, New York

Food and Nutrition Board Staff

SUSHMA PALMER, *Director*
FRANCES M. PETER, *Deputy Director and Editor*
CHRISTOPHER P. HOWSON, *Project Director*
FARID E. AHMED, *Project Coordinator*
SUSAN E. BERKOW, *Program Officer*
ALDON GRIFFIS, *Research Assistant*
MARIAN F. MILLSTONE, *Research Assistant*
AVIS I. HARRIS, *Senior Secretary*
DOROTHY R. MAJEWSKI, *Senior Secretary* (until October 1988)
MICHELLE E. SMITH, *Senior Secretary* (from November 1988)
ELSIE C. STURGIS, *Senior Secretary*

FOOD AND NUTRITION BOARD

RICHARD J. HAVEL (*Chairman*), Cardiovascular Research Institute, University of California School of Medicine, San Francisco, California
HAMISH N. MUNRO (*Vice Chairman*), U.S. Department of Agriculture Human Nutrition Research Center on Aging, Tufts University, Boston, Massachusetts
EDWARD J. CALABRESE, Environmental Health Program, Division of Public Health, University of Massachusetts, Amherst, Massachusetts
DORIS H. CALLOWAY, Department of Nutritional Sciences, University of California, Berkeley, California
WILLIAM E. CONNOR, Department of Medicine, Oregon Health Sciences University, Portland, Oregon
DeWITT S. GOODMAN, Institute of Human Nutrition, Columbia University, New York, New York
M.R.C. GREENWOOD, Department of Biology, Vassar College, Poughkeepsie, New York
JOAN D. GUSSOW, Department of Nutrition Education, Teachers College, Columbia University, New York, New York
JOHN E. KINSELLA, Institute of Food Science, Cornell University, Ithaca, New York
LAURENCE N. KOLONEL, Cancer Research Center of Hawaii, University of Hawaii, Honolulu, Hawaii
BERNARD J. LISKA, Department of Food Science, Purdue University, West Lafayette, Indiana
REYNALDO MARTORELL, Food Research Institute, Stanford University, Stanford, California
DONALD B. McCORMICK, Department of Biochemistry, Emory University School of Medicine, Atlanta, Georgia
J. MICHAEL McGINNIS (*Ex Officio*), Office of Disease Prevention and Health Promotion, Department of Health and Human Services, Washington, D.C.
WALTER MERTZ, Human Nutrition Research Center, Agricultural Research Service, U.S. Department of Agriculture, Beltsville, Maryland
ARNO G. MOTULSKY (*Ex Officio*), Center for Inherited Diseases, University of Washington, Seattle, Washington
MALDEN C. NESHEIM, Office of the Vice Provost, Cornell University, Ithaca, New York

Food and Nutrition Board Staff

SUSHMA PALMER, *Director*
FRANCES M. PETER, *Deputy Director*
LUCIANA FROST, *Administrative Associate*
UTE S. HAYMAN, *Administrative Assistant*

Preface

In the first half of the twentieth century, research in human nutrition was concerned primarily with the role of essential nutrients, particularly vitamins, in human deficiency diseases. It was not until the end of World War II that nutrition research in human populations in the United States focused on the role of diet in chronic diseases, such as coronary heart disease and cancer. The link forged by these later epidemiologic studies was strengthened by complementary evidence from laboratory studies. In the last decade, the wealth of information provided by these studies has been used by U.S. government agencies and other expert groups to propose dietary guidelines aimed at reducing the risk of one or more chronic diseases among North Americans.

Although there has been increasing consensus among various groups on many of the dietary guidelines, there remains a lack of agreement on several specific points. Our incomplete knowledge about the multiple environmental and genetic factors that determine chronic disease risk, specifically dietary and nutritional risk factors, the imprecision in methods for assessing nutrient and dietary status, and the differences among target groups and the objectives of recommendations proposed by many expert groups have all contributed to the variability in dietary guidelines. Furthermore, there has been insufficient documentation of the scientific bases underlying the conclusions and recommendations and the criteria used to derive them.

In recent years, the public has been confronted with a plethora of information on diet and its association with chronic diseases without guidance on how to separate fact from fallacy. The National Research Council's Food and Nutrition Board in the Commission on Life Sciences recognized this dilemma and the need to address the important issue of the role of diet in the etiology and prevention of the major causes of morbidity and mortality in the United States. In 1984, the Board established the Committee on Diet and Health to undertake a comprehensive analysis of the scientific literature on diet and the spectrum of major chronic diseases and to evaluate the criteria used to assess the strength of the evidence on associations of diet with health. This report is the result of this critical and detailed analysis and is the first of a systematic series of reports to be issued in a pattern similar to the Board's *Recommended Dietary Allowances* (RDAs)—a periodic review that provides guidelines on the desirable amounts of essential nutrients in the diet.

The three major objectives of this study were:

- to develop criteria for systematically evaluating the scientific evidence relating dietary components, foods, food groups, and dietary patterns to the maintenance of health and to the reduction of risk of chronic disease;

- to use these criteria to assess the scientific evidence relating these same factors (dietary components, foods, food groups, and dietary patterns) to health and to the reduction of chronic disease risk; and
- on the basis of this assessment, to propose dietary guidelines for maintaining health and reducing chronic disease risk, to suggest directions for future research, and to provide the basis for periodic updates of the literature and guidelines as new information on diet and health is acquired.

The 19-member interdisciplinary committee appointed to conduct the study was assisted by one adviser and two Food and Nutrition Board liaison members. Collectively, the Committee on Diet and Health included expertise in such disciplines as biochemistry, biostatistics, clinical medicine, epidemiology, foods and food consumption patterns, human genetics, metabolism, various aspects of nutrition, public health, and toxicology. During the course of the study, the committee examined data on the association between diet, health, and chronic disease, focusing on coronary heart disease, peripheral arterial disease, stroke, hypertension, cancer, obesity, osteoporosis, diabetes mellitus, hepatobiliary disease, and dental caries. Whenever possible, the committee looked directly at primary sources of data contained in the literature. Works of other evaluative bodies, for example, the *Surgeon General's Report on Nutrition and Health* published in 1988 and *Dietary Guidelines for Americans* published in 1985 by the Departments of Agriculture and Health and Human Services, were important secondary sources of information. By drawing from the vast and diverse epidemiologic and laboratory data base, the committee has attempted to ensure a comprehensive and critical review. Thus, the conclusions and recommendations throughout this report are supported by a detailed discussion of the basis underlying them.

The committee held 13 meetings during which it evaluated the literature and prepared its general review and summary. A public meeting convened at the outset of the study served as a forum for open discussion and presentation of views and information by the public and by representatives of the food industry, consumer groups, and scientists.

In the early stages of the study, the committee conducted five workshops during which it interacted with and shared the expertise and research findings of a larger community of scientists. These workshops provided committee members an opportunity to consider new or controversial data and all valid scientific points of view and to identify gaps in knowledge. The subjects considered in the workshops included the role of vitamins, minerals, and trace elements in chronic disease risk; the importance of genetic factors in selected diet-related chronic diseases; the association of energy, fiber, and carbohydrates with chronic disease; pediatric diet and the risk of adult chronic disease; and criteria for formulating dietary guidelines.

The committee's report is presented in four parts. Part I (Introduction, Definitions, and Methodology) offers four introductory chapters in addition to the Executive Summary (Chapter 1). These chapters highlight the methods and criteria used by the committee as well as the major conclusions and dietary recommendations, their bases, and their implications. Chapter 2 presents the criteria for evaluating the evidence linking diet and chronic disease. The strengths and weaknesses of methodologies for assessing dietary intake as well as those of specific kinds of studies (both human and animal) designed to assess diet–health relationships are reviewed. Trends in, and assessment of, food consumption patterns and the nutritional status of the U.S. population are discussed in Chapter 3. In Chapter 4, the committee discusses the role of genetics in nutrition and how genetic and environmental factors interact to influence diet-associated risks of chronic disease. Chapter 5 presents the rationale for selecting the major diet-related chronic diseases addressed in this report and provides an overview of the extent and distribution of those diseases in the United States. In Part II of this report (Evidence on Dietary Components and Chronic Diseases), the criteria described in Chapter 2 provide the basis of a review of the evidence by *nutrients*. The 13 chapters in that section (6 through 18) summarize the epidemiologic, clinical, and laboratory data pertaining to each nutrient or dietary factor and the chronic diseases identified by the committee. Nutrient interactions and mechanisms of action are discussed where applicable. Part III (Impact of Dietary Patterns on Chronic Diseases) briefly reassembles the evidence relating nutrients to specific chronic diseases or conditions and comments on the importance of diet relative to nondietary risk factors in the etiology of those diseases. Part IV (Overall Assessment, Conclusions, and Recommendations) contains two chapters. Chapter 27 presents the committee's conclusions, along with a summary of the process, criteria, and scientific bases underlying them. Chapter 28 presents the

committee's dietary recommendations and the rationales for each, as well as a detailed discussion of how the recommendations compare to those issued in the past by other expert groups and the bases for similarities and dissimilarities among these. Also contained in this section is an in-depth discussion of the potential risks and public health benefits of the committee's dietary recommendations.

The committee hopes this report will be a useful resource document for scientists in academia and industry, for the general public, and for policymakers. Furthermore, it believes that the nine dietary recommendations presented in Chapter 28 and in the Executive Summary (Chapter 1) can be implemented within the framework of the current U.S. lifestyle. Collaboration among government agencies, the food industry, health professionals (physicians, nutritionists, dietitians, and public health personnel), educational institutions, leaders in mass media, and the general public is encouraged to attain this goal.

The committee greatly appreciates the hard work and organization provided by the Food and Nutrition Board staff headed by Dr. Sushma Palmer and consisting of Drs. Christopher Howson, Farid Ahmed, and Susan Berkow, Mrs. Frances Peter, Mr. Aldon Griffis, Ms. Marian Millstone, Ms. Dorothy Majewski, Ms. Avis Harris, Ms. Michelle Smith, and Mrs. Elsie Sturgis.

The committee is also greatly indebted to Dr. Charles Lieber of the Bronx Veterans Administration Medical Center for his major contribution to the chapter on alcohol and to the many people who served as consultants, as advisers, and in other resource capacities. Many of these people drafted manuscripts for consideration by the committee, presented their views at the public meeting, or upon request, commented on drafts, presented data, or engaged in discussions during committee meetings, conferences, or workshops. Specifically, the committee expresses its thanks to Dr. Norman Bell, Veterans Administration Medical Center, Charleston; Dr. Peter Bennett, National Institutes of Health; Dr. Gerald Berenson, Louisiana State University Medical School; Dr. Jan Breslow, Rockefeller University; Dr. Raymond Burk, University of Texas Health Sciences Center; Dr. Ritva Butrum, National Institutes of Health; Dr. Tim Byers, State University of New York; Dr. T. Colin Campbell, Cornell University; Dr. James Carlos, National Institute of Dental Research; Dr. Marie Cassidy, George Washington University; Dr. George Christakis, University of Miami School of Medicine; Dr. Charles Davidson, Massachusetts Institute of Technology; Dr. William Dietz, New England Medical Center; Dr. Jean Durlach, Hospital Cochin; Dr. Johanna Dwyer, Francis Stern Nutrition Center; Dr. S. Boyd Eaton, Emory University; Dr. R. Curtis Ellison, University of Massachusetts Medical Center; Dr. Gail Eyssen, University of Toronto; Dr. L. Jack Filer, Jr., Executive Director of the International Life Sciences Institute–Nutrition Foundation; Dr. Michael Goldblatt, McDonald's Corporation; Dr. Clifford Grobstein, University of California, San Diego; Dr. Scott Grundy, University of Texas Health Sciences Center; Dr. Suzanne Harris, Deputy Assistant Secretary for Food and Consumer Services; Dr. Robert Heaney, Creighton University; Dr. Dwight Heath, Brown University; Dr. D. Mark Hegsted, Harvard University; Dr. Richard Hillman, Washington University Medical School; Dr. Paul Hochstein, University of California; Dr. Michael Holick, Tufts Human Nutrition Research Center; Dr. Paul Hopper, General Foods Corporation; Dr. Edward Horton, University of Vermont; Dr. Thomas Hostetter, University of Minnesota; Dr. Michael Jacobson, Center for Science in the Public Interest; Dr. Norman Kaplan, University of Texas; Dr. Carl Keen, University of California, Davis; Dr. Ahmed Kissebah, University of Wisconsin; Dr. Leslie Klevay, USDA–Human Nutrition Research Center; Dr. David Klurfeld, Wistar Institute; Dr. William Knowler, National Institutes of Health; Dr. Stephen Krane, Harvard University Medical School; Dr. Peter Kwiterovich, Johns Hopkins University; Dr. Orville Levander, USDA–Human Nutrition Research Center; Dr. A. Harold Lubin, American Medical Association; Dr. Lawrence Machlin, Hoffman–La-Roche, Inc.; Dr. Aaron Marcus, New York Veterans Administration Medical Center; Dr. Alvin Mauer, University of Tennessee; Dr. Paul McCay, Oklahoma Medical Research Foundation; Dr. Janet McDonald, Food and Drug Administration; Dr. J. Michael McGinnis, Department of Health and Human Services; Dr. Donald McNamara, University of Arizona; Dr. Judy Miller, Indiana University School of Medicine; Dr. John Milner, University of Illinois; Dr. William Mitch, Emory University School of Medicine; Dr. Curtis Morris, University of California, San Francisco; Dr. Janis Neville, Case Western Reserve University; Dr. Ralph Paffenberger, Stanford University; Mr. Richard Peto, University of Oxford; Dr. Ernesto Pollitt, University of California, Davis; Dr. Gerry Reaven, Stanford University; Dr. Floyd Rector, University of California, San Francisco; Dr.

Lawrence Resnick, New York Hospital–Cornell Medical Center; Dr. Irwin Rosenberg, Tufts University; Dr. Paul Saltman, University of California, San Diego; Dr. Raymond Schucker, Food and Drug Administration; Dr. William Schull, University of Texas; Dr. Noel Solomons, Institute of Nutrition of Central America and Panama; Dr. Charles Sing, University of Michigan Medical School; Dr. Michael Stern, University of Texas Health Science Center; Dr. Paul R. Thomas, Institute of Medicine; Dr. Michael Tuck, University of California, Los Angeles; Dr. Myron Weinberger, Indiana University; Dr. Sidney Weinhouse, Temple University School of Medicine; Ms. Clair Wilson, Council for Research Planning in Biological Sciences and the Vegetarian Society of D.C.; Dr. Richard Wortman, Massachusetts Institute of Technology; and Dr. Catherine Woteki, National Center for Health Statistics.

Finally, the committee would like to thank the staff of the library of the National Academy of Sciences for their invaluable assistance in preparing this report and the staff of the National Academy Press, especially Chief Manuscript Editor Richard Morris, who herded this volume through production. Special acknowledgment is due to Dr. Richard J. Havel, Chairman of the Food and Nutrition Board, and other board members for their expert advice, oversight, and constant encouragement over the course of this 3.5-year study.

ARNO G. MOTULSKY
Chairman
Committee on Diet and Health

Contents

EXECUTIVE SUMMARY 1

Purpose, Approach, and Scope of the Study 1
Criteria for Assessment 2
Criteria and Process for Formulating Dietary Recommendations 3
Major Conclusions and Their Bases 5
The Committee's Dietary Recommendations 10
Implications of Recommendations for Food Choices 15
Impact on Public Health: Benefits and Risks of Dietary Modification 16
Implementation of Dietary Recommendations 18
Research Directions 18

The table of contents of the entire report, from which this Executive Summary is extracted, is presented below.

PART I: INTRODUCTION, DEFINITIONS, AND METHODOLOGY

1 Executive Summary
2 Methodologic Considerations in Evaluating the Evidence
3 Dietary Intake and Nutritional Status: Trends and Assessment
4 Genetics and Nutrition
5 Extent and Distribution of Chronic Disease: An Overview

PART II: EVIDENCE ON DIETARY COMPONENTS AND CHRONIC DISEASES

6 Calories: Total Macronutrient Intake, Energy Expenditure, and Net Energy Stores
7 Fats and Other Lipids
8 Protein
9 Carbohydrates
10 Dietary Fiber
11 Fat-Soluble Vitamins
12 Water-Soluble Vitamins
13 Minerals
14 Trace Elements
15 Electrolytes
16 Alcohol
17 Coffee, Tea, and Other Nonnutritive Dietary Components
18 Dietary Supplements

PART III: IMPACT OF DIETARY PATTERNS ON CHRONIC DISEASES

19 Atherosclerotic Cardiovascular Diseases
20 Hypertension
21 Obesity and Eating Disorders
22 Cancer
23 Osteoporosis
24 Diabetes Mellitus
25 Hepatobiliary Disease
26 Dental Caries

PART IV: OVERALL ASSESSMENT, CONCLUSIONS, AND RECOMMENDATIONS

27 Overall Assessment and Major Conclusions
28 Recommendations on Diet, Chronic Diseases, and Health

Index

Executive Summary

The twentieth century has witnessed noticeable shifts in the direction of nutrition programs, policy, and research in industrialized nations—from identification and prevention of nutrient deficiency diseases in the first three decades of the century to refinement and application of knowledge of nutrient requirements in the subsequent two decades. In the second half of the century, emphasis on nutrient deficiency diseases decreased as the major causes of mortality shifted from infectious to chronic diseases. Attention then turned to investigating the role of diet in the maintenance of health and the reduction of the risk of such chronic diseases as heart disease and cancer. Subsequently, epidemiologic, clinical, and laboratory research demonstrated that diet is one of the many important factors involved in the etiology of these diseases. During the past few decades, scientists have been faced with the challenge of identifying dietary factors that influence specific diseases and defining their pathophysiological mechanisms. Simultaneously, public health policymakers, the food industry, consumer groups, and others have been debating how much and what kind of evidence justifies giving dietary advice to the public and how best to mitigate risk factors on which there is general agreement among scientists.

PURPOSE, APPROACH, AND SCOPE OF THE STUDY

This study on diet, chronic diseases, and health was launched in an effort to address the scientific issues that are fundamental to nutrition policy on reducing the risk of these diseases. The Committee on Diet and Health was appointed to conduct the study within the Food and Nutrition Board of the National Research Council's Commission on Life Sciences. The committee began with the understanding that lack of consensus on the role of diet in the etiology of chronic diseases derived partly from incomplete knowledge and partly from the absence of generally accepted criteria for interpreting the evidence. It also noted that the totality of the evidence relating dietary components to the entire spectrum of major chronic diseases had yet to be examined systematically. Several reports issued to date have addressed many issues of public health importance. However, most have not been sufficiently comprehensive and have not crossed the boundary separating the simple assessment of dietary risk factors for single chronic diseases from the complex task of determining how these risk factors influence the entire spectrum of chronic diseases—atherosclerotic cardiovascular diseases, cancer, diabetes, obesity, osteoporosis, dental caries, and chronic liver and kidney diseases.

This report attempts to cross that boundary. It complements the recent *Surgeon General's Report on Nutrition and Health* and other efforts of government agencies and voluntary health and scientific organizations by providing an in-depth analysis of the overall relationship between diet and the full spectrum of major chronic diseases.

In this report, the committee reviews the evidence regarding all major chronic public health conditions that diet is believed to influence. It draws conclusions about the effects of nutrients, foods, and dietary patterns on health, proposes dietary recommendations that have the potential for diminishing risk, and estimates their public health impact.

The committee focuses on risk reduction rather than on management of clinically manifest disease. It recognizes, however, that the distinction between *prevention* or *risk reduction* and *treatment* may be blurred in conditions where dietary modification might delay the onset of clinical diseases (e.g., the cardiovascular complications in diabetes mellitus) or might slow the progression of impaired function; therefore, conditions such as these are addressed, but only briefly. The committee defined risk reduction broadly to include decreased morbidity as well as mortality from chronic diseases and believes that consideration should be given to dietary modification to reduce the risk for both. The difficulty of quantifying the role of diet in the etiology of chronic diseases and the potential public health impact of dietary modification are discussed in Chapters 2 and 28.

In Chapter 2, the committee presents criteria for assessing the data from single studies and explains its procedure for evaluating the overall evidence. Special attention is given to the role of nutrient interactions and to the assessment of benefits and risks in arriving at conclusions and formulating dietary recommendations. Throughout the report, the committee recognizes that genetically dependent variability among individuals, and variability due to age, sex, and physiological status, may all affect physiological requirements for nutrients, responses to dietary exposures, the risk of chronic diseases, and consequently the effectiveness of dietary recommendations in reducing the risk of chronic diseases. The report addresses in detail the risks that apply to the general population and comments on the feasibility of defining risks for subpopulations and individuals with different susceptibilities. Finally, the committee discusses the limitations of data on diet-disease relationships, emphasizes the necessarily interim nature of its conclusions and recommendations, and proposes directions for research.

CRITERIA FOR ASSESSMENT

The strengths and weaknesses of different kinds of clinical, epidemiologic, and laboratory studies and the methodologies for dietary assessment are reviewed in Chapter 2. To the extent possible, the committee evaluated data from studies in humans as well as in animals. It noted that ecological correlations of dietary factors and chronic diseases among human populations provide valuable data but cannot be used alone to estimate the strength of the association between diet and diseases. The effect of diet on chronic diseases has been most consistently demonstrated in comparisons of populations with substantially different dietary practices, possibly because it is more difficult to identify such associations within a population whose diet is fairly homogeneous. Thus in general, associations within populations based on case-control and prospective cohort studies underestimate the association. In intervention studies, long exposure is usually required for the effect of diet on chronic disease risk to be manifested. Furthermore, the strict criteria for selecting participants in such studies may result in more homogeneous study samples, which limit the applicability of results to the general population. Despite the limitations of various types of studies in humans, the committee concluded that repeated and consistent findings of an association between certain dietary factors and diseases are likely to be real and indicative of a cause-and-effect relationship.

Experiments on dietary exposure of different animal strains can take genetic variability into account and permit more intensive observation. However, extrapolation of data from animal studies to humans is limited by the ability of animal models to simulate human diseases and the comparability of absorption and metabolic phenomena among species. The committee placed more confidence in data derived from studies on more than one animal species or test system, on results that have been reproduced in different laboratories, and on data that indicate a dose-response relationship.

The committee concluded that assessments of the strength of associations between diet and chronic diseases cannot simply be governed by criteria commonly used for inferring causality in other areas of human health. Faced with the special characteristics of studies on nutrients, dietary patterns, and chronic diseases, the commit-

tee first assessed the strengths and weaknesses of each kind of study and then evaluated the total evidence against six criteria: strength of association, dose-response relationship, temporally correct association, consistency of association, specificity of association, and biologic plausibility. Finally, it assessed the overall strength of the evidence on a continuum from highly likely to very inconclusive. Overall, the strength, consistency, and preponderance of data and the degree of concordance in epidemiologic, clinical, and laboratory evidence determined the strength of the conclusions in this report.

Integration of the Overall Evidence

In Section II of this report, Evidence on Dietary Components and Chronic Diseases (Chapters 6 through 18), the committee uses the approach described briefly above and more fully in Chapter 2. Throughout this section, the committee considers the epidemiologic, clinical, and experimental data pertaining to each nutrient or dietary factor and specific chronic diseases, including cardiovascular diseases, specific cancers, diabetes, hypertension, obesity, osteoporosis, hepatobiliary disease, and dental caries. Nutrient interactions and mechanisms of action are discussed where applicable.

In Section III, Impact of Dietary Patterns on Chronic Diseases, the evidence relating nutrients to specific chronic diseases and diet-related conditions is briefly reassembled and leads to the committee's conclusions on the role of dietary patterns in the etiology of the diseases and assessment of the potential for reducing their frequency and severity. These conclusions are drawn directly from the research data, where the evidence pertains to dietary patterns or foods and food groups, or from extrapolations from the evidence on individual nutrients. In its overall review and integration of the evidence, the committee moved from a consideration of individual nutrients to foods, to food groups, and then to dietary patterns as they relate to the spectrum of chronic diseases.

CRITERIA AND PROCESS FOR FORMULATING DIETARY RECOMMENDATIONS

Absolute proof is difficult to obtain in any branch of science. As evidence accumulates, however, it often reaches the point of proof in an operational sense, even though proof in an absolute sense may be lacking. In law, proof beyond a reasonable doubt is generally accepted as a standard for making decisions and taking action. The degree of evidence as well as the severity of the crime are the bases for the relative intrusiveness of legal actions taken, e.g., issuing a warning for a misdemeanor compared to the imposition of severe penalties for a felony.

A similar paradigm can be applied to evidence on dietary patterns and associated health risks. For example, public education might be sufficient to warn against the potential hazard of excess caffeine intake, whereas evidence on the toxicity and carcinogenicity of aflatoxin warrants government regulation to curtail aflatoxin contamination of grains and milk. The strength of the evidence might not be the only relevant criterion for determining the course of action; other factors include the likelihood and severity of an adverse effect, potential benefits of avoiding the hazard, and the feasibility of reducing exposure.

Much remains to be learned about the impact of diet on chronic disease risk. Nonetheless, in accordance with this paradigm, the committee concluded that the overall evidence regarding a relationship between certain dietary patterns (e.g., a diet high in total fat and saturated fat) and chronic diseases (e.g., cardiovascular diseases and certain cancers) supports (1) a comprehensive effort to inform the public about the likelihood of certain risks and the possible benefits of dietary modification and (2) the use of technological and other means (e.g., production of leaner animal products) to facilitate dietary change.

Assessing Risks and Benefits

The committee hopes to contribute to knowledge about the process of arriving at dietary recommendations by documenting the considerations and the logic that underlie its dietary recommendations. An essential step in developing dietary recommendations for overall health maintenance is the synthesis of recommendations pertaining to single diseases into a single coherent set of recommendations to reduce the overall risk of diet-related chronic diseases. For example, recommendations to enhance calcium intake for possible protection against osteoporosis might, in isolation, be viewed as conflicting with recommendations for coronary heart disease, because dairy products—which contribute the most calcium to the U.S. diet—are also rich sources of saturated fats, which increase coronary heart disease risk. Thus,

recommendations for maintaining adequate bone mass as well as for preventing coronary disease would logically stress consumption of low-fat dairy products.

The committee also considered the synergistic and antagonistic effects of dietary interactions. For example, the potential benefits of encouraging adequate trace element intake for reducing the risk of certain cancers could in principle be offset by a recommendation to increase vegetable intake for the possible prevention of colon cancer, because high plant food diets are also high in fiber, which could initially inhibit absorption of certain trace elements. To a large extent, the task of assessing such potential competing risks and benefits and nutrient interactions was simplified by an inherent consistency in dietary recommendations to maintain good health. For example, the advisability of consuming a diet low in saturated fatty acids, total fat, and cholesterol is supported by strong evidence of potential benefit in reducing the risk of cardiovascular diseases as well as comparatively weaker evidence that low-fat diets decrease the risk of certain kinds of cancers.

Other Considerations

The committee also considered whether to base recommendations on individual nutrients, on single foods or food groups, or on overall pattern of dietary intake. Although recommendations based on nutrients or food groups are of value, in the committee's experience guidelines directed toward overall dietary patterns are the most useful because they address the total diet and are more easily interpreted by the general public. Moreover, because many studies on diet and chronic diseases in humans have focused on foods rather than on single nutrients, food-based recommendations may more accurately reflect current understanding about the relationship between chronic diseases and diet. Nonetheless, many of the diet-disease relationships examined required consideration of single foods, food groups, and specific nutrients. This is reflected in the committee's recommendations.

The committee agreed that quantitative guidelines should be proposed when warranted by the strength of the evidence and the potential importance of recommendations to public health. Such guidelines can take into account nutrient interactions, they are less susceptible to misinterpretation when translated into food choices, and they provide specific targets that can serve as a basis for nutrition programs and policy. The committee has attempted to explain the degree of certainty warranted by the evidence and to make quantitative recommendations to the extent justified.

Recommendations for Individuals as Opposed to Populations

There are two complementary approaches to reducing risk factors in the target population. The first, the public health or population-based approach, is aimed at the general population, and the second, the high-risk or individual-based approach, is aimed at individuals with defined risk profiles. Most chronic diseases etiologically associated with nutritional factors (e.g., atherosclerotic cardiovascular diseases, hypertension, obesity, many cancers, osteoporosis, and diabetes mellitus) also have genetic determinants, and genetic-environmental interactions play an important role in determining disease outcome. For most diseases, however, it is not yet possible to identify susceptible genotypes and thus risks to specific individuals. Furthermore, the variability in nutrient requirements among individuals is not well defined. Therefore, it is usually not possible to make recommendations for individuals. On the other hand, because the major chronic disease burden falls on the general population (approximately 70% of all deaths in the U.S. population are due to cardiovascular diseases and cancer), the most benefit is likely to be achieved by a public-health prevention strategy to shift the distribution of dietary risk factors by means of dietary recommendations to reduce chronic disease risk in the general population.

The public health approach to prevention recognizes that even though reduction of risk for individuals with average risk profiles (e.g., an average serum cholesterol level) might be small or negligible, because these people represent the great majority of the population, the benefit for the total population is likely to be paradoxically large (e.g., because most coronary deaths occur among those who have only moderate elevations in serum cholesterol levels). However, when it is possible to identify high-risk persons, such as those with certain hyperlipidemias, special attention can be directed to their management. Therefore, in the committee's judgment, an effective prevention strategy should be aimed at the general public and, where knowledge permits, it should be complemented with recommendations for those at high risk.

MAJOR CONCLUSIONS AND THEIR BASES

The committee analyzed trends in the major chronic diseases as well as in eating patterns (Chapters 3 and 5). It reviewed the epidemiologic, clinical, and laboratory evidence pertaining to dietary factors and chronic diseases (Chapters 6 through 26) and attempted to put into perspective the role of diet as it relates to other environmental and genetic factors in the etiology of these diseases (Chapters 4 and 5).

Following are the general conclusions drawn from the committee's in-depth review, as well as the specific conclusions pertaining to the major dietary components and specific chronic diseases.

General Conclusions

- A comprehensive review of the epidemiologic, clinical, and laboratory evidence indicates that diet influences the risk of several major chronic diseases. The evidence is very strong for atherosclerotic cardiovascular diseases and hypertension and is highly suggestive for certain forms of cancer (especially cancers of the esophagus, stomach, large bowel, breast, lung, and prostate). Furthermore, certain dietary patterns predispose to dental caries and chronic liver disease, and a positive energy balance produces obesity and increases the risk of noninsulin-dependent diabetes mellitus. However, the evidence is not sufficient for drawing conclusions about the influence of dietary patterns on osteoporosis and chronic renal disease.
- Most chronic diseases in which nutritional factors play a role also have genetic and other environmental determinants, but not all the environmental risk factors have been clearly characterized and susceptible genotypes usually have not been identified. Furthermore, the mechanisms of genetic and environmental interactions involved in disease are not fully understood. It is evident that dietary patterns are important factors in the etiology of several major chronic diseases and that dietary modifications can reduce such risks. Nevertheless, for most diseases, it is not yet possible to provide quantitative estimates of the overall risks and benefits.

Fats, Other Lipids, and High-Fat Diets

The following conclusions derive from the committee's extensive review of the data described in Chapters 6 (Calories), 7 (Fats and Other Lipids), 19 (Atherosclerotic Cardiovascular Diseases), 21 (Obesity and Eating Disorders), 22 (Cancer), and 25 (Hepatobiliary Disease).

General Conclusion

- There is clear evidence that the total amounts and types of fats and other lipids in the diet influence the risk of atherosclerotic cardiovascular diseases and, to a less well-established extent, certain forms of cancer and possibly obesity. The evidence that the intake of saturated fatty acids and cholesterol are causally related to atherosclerotic cardiovascular diseases is especially strong and convincing.

Total Fats

- In several types of epidemiologic studies, a high-fat intake is associated with increased risk of certain cancers, especially cancers of the colon, prostate, and breast. The epidemiologic evidence is not totally consistent, but it is supported by experiments in animals. The combined epidemiologic and laboratory evidence suggests that a reduction of total fat intake is likely to decrease the risk of these cancers.
- High-fat intake is associated with the development of obesity in animals and possibly in humans. In short-term clinical studies, a marked reduction in the percentage of calories derived from dietary fat has been associated with weight loss.
- Although gallbladder disease is associated with obesity, there is no conclusive evidence that it is associated with fat intake.
- Intake of total fat per se, independent of the relative content of the different types of fatty acids, is not associated with high blood cholesterol levels and coronary heart disease. A reduction in total fat consumption, however, facilitates reduction of saturated fatty acid intake; hence, in addition to reducing the risk of certain cancers, and possibly obesity, it is a rational part of a program aimed at reducing the risk of coronary heart disease.

Saturated Fatty Acids

- Clinical, animal, and epidemiologic studies demonstrate that increased intakes of saturated fatty acids (12 to 16 carbon atoms in length) increase the levels of serum total and low-density-lipoprotein (LDL) cholesterol and that these higher levels in turn lead to atherosclerosis and increase the risk of coronary heart disease. Satu-

rated fatty acid intake is the major dietary determinant of the serum total cholesterol and LDL cholesterol levels in populations and thereby of coronary heart disease risk in populations. Lowering saturated fatty acid intake is likely to reduce serum total and LDL cholesterol levels and, consequently, coronary heart disease risk.

- The few epidemiologic studies on dietary fat and cancer that have distinguished between the effects of specific types of fat indicate that higher intakes of saturated fat as well as total fats are associated with a higher incidence of and mortality from cancers of the colon, prostate, and breast. In general, these findings are supported by data from animal experiments.

Polyunsaturated Fatty Acids

- Clinical and animal studies provide firm evidence that omega-6 polyunsaturated fatty acids when substituted for saturated fatty acids result in a lowering of serum total cholesterol and LDL cholesterol and usually also some lowering of high-density-lipoprotein (HDL) cholesterol levels.
- Laboratory studies in rodents suggest that diets with high levels of vegetable oils containing omega-6 polyunsaturated fatty acids promote certain cancers more effectively than diets with high levels of saturated fats, whereas there is some evidence that diets with a high content of omega-3 polyunsaturated fatty acids may inhibit these same cancers. However, these findings are not supported by the limited number of epidemiologic studies that have distinguished between the effects of different types of fat. There are no human diets that naturally have very high levels of total polyunsaturated fatty acids, and there is no information about the long-term consequences of high polyunsaturated fatty acid intakes.
- Fish oils containing large amounts of omega-3 polyunsaturated fatty acids reduce plasma triglyceride levels and increase blood clotting time. Their effects on LDL cholesterol vary, and data on the long-term health effects of large doses of omega-3 polyunsaturated fatty acids are limited. Limited epidemiologic data suggest that consumption of one or two servings of fish per week is associated with a lower coronary heart disease risk, but the evidence is not sufficient to ascertain whether the association is causal or related to the omega-3 polyunsaturated fatty acid content of fish.

Monounsaturated Fatty Acids

- Clinical studies indicate that substitution of monounsaturated for saturated fatty acids results in a reduction of serum total cholesterol and LDL cholesterol without a reduction in HDL cholesterol.

Dietary Cholesterol

- Clinical, animal, and epidemiologic studies indicate that dietary cholesterol raises serum total cholesterol and LDL cholesterol levels and increases the risk of atherosclerosis and coronary heart disease. There is substantial inter- and intra-individual variability in this response. High dietary cholesterol clearly seems to contribute to the development of atherosclerosis and increased coronary heart disease risk in the population.

Trans *Fatty Acids*

- Clinical studies indicate that *trans* fatty acids and their *cis* isomers have similar effects on plasma lipids. Animal studies do not indicate that *trans* fatty acids have a greater tumor-promoting effect than their *cis* isomers.

Carbohydrates, Vegetables, Fruits, Grains, Legumes, and Cereals and Their Constituents

The committee's conclusions on carbohydrates and foods containing complex carbohydrates—i.e., vegetables, fruits, grains, legumes, and cereal products—derive from a review of direct and indirect evidence throughout the report, especially in Chapters 9 (Carbohydrates), 10 (Dietary Fiber), 11 (Fat-Soluble Vitamins), 12 (Water-Soluble Vitamins), and 22 (Cancer).

- Diets high in plant foods—i.e., fruits, vegetables, legumes, and whole-grain cereals—are associated with a lower occurrence of coronary heart disease and cancers of the lung, colon, esophagus, and stomach. Although the mechanisms underlying these effects are not fully understood, the inverse association with coronary heart disease may be largely explained by the usually low saturated fatty acid and cholesterol content of such diets. Such diets are also low in total fat, which is directly associated with the risk of certain cancers, but rich in complex carbohydrates (starches and fiber) and certain vitamins, minerals, trace elements, and nonnutritive constituents, and these factors probably also confer protection against certain cancers and coronary heart disease.
- Compared to nonvegetarians, complete vegetarians and lacto-ovovegetarians have lower serum levels of total and LDL cholesterol and triglycerides. These lower levels may be the combined

result of lower intakes of saturated fatty acids and total fat and higher intakes of water-soluble fiber (e.g., pectin and oat bran). In clinical and animal studies, such fiber has been found to produce small reductions in serum total cholesterol independently of the effect due to fat reduction.

- Populations consuming high-carbohydrate diets, which are high in plant foods, have a comparatively lower prevalence of noninsulin-dependent diabetes mellitus, possibly because of the higher proportion of complex carbohydrate intake and lower prevalence of obesity—a risk factor for noninsulin-dependent diabetes mellitus. In clinical studies, such diets have been shown to improve glucose tolerance and insulin sensitivity.
- Epidemiologic studies indicate that consumption of carotenoid-rich foods, and possibly serum carotene concentration, are inversely associated with the risk of lung cancer.
- Laboratory studies in animals strongly and consistently indicate that certain retinoids prevent, suppress, or retard the growth of chemically induced cancers at a number of sites, including the esophagus, pancreas, and colon, but especially the skin, breast, and bladder. However, most epidemiologic studies do not show an association between preformed vitamin A and cancer risk or a relationship between plasma retinol level and cancer risk.
- Epidemiologic studies suggest that vitamin C-containing foods such as citrus fruits and vegetables may offer protection against stomach cancer, and animal experiments indicate that vitamin C itself can protect against nitrosamine-induced stomach cancer. The evidence linking vitamin C or foods containing that vitamin to other cancer sites is more limited and less consistent.
- Some investigators have postulated that several other vitamins (notably vitamin E, folic acid, riboflavin, and vitamin B_{12}) may block the initiation or promotion of cancer, but the committee judged the evidence too limited to draw any conclusions.
- Epidemiologic and clinical studies indicate that a diet characterized by high-fiber foods may be associated with a lower risk of coronary heart disease, colon cancer, diabetes mellitus, diverticulosis, hypertension, or gallstone formation, but there is no conclusive evidence that it is dietary fiber, rather than the other components of vegetables, fruits, and cereal products, that reduces the risk of those diseases. Although soluble fibers can decrease serum cholesterol and glucose levels, and certain insoluble fibers inhibit chemically induced tumorigenesis, it is difficult to compare the effects of specific dietary fibers tested in the laboratory with the effects of fiber-containing foods or of other potentially protective substances present in these foods.
- Although human and animal studies indicate that all fermentable carbohydrates can cause dental caries, sucrose appears to be the most cariogenic. The cariogenicity of foods containing fermentable carbohydrates is influenced by the consistency and texture (e.g., stickiness) of the food as well as by the frequency and sequence of consumption. Sugar consumption (by those with an adequate diet) has not been established as a risk factor for any chronic disease other than dental caries in humans.

Protein and High-Protein Diets

Studies of the association of protein and high-protein diets with chronic diseases are reviewed in Chapters 8 (Protein), 13 (Minerals), 19 (Atherosclerotic Cardiovascular Diseases), 22 (Cancer), and 23 (Osteoporosis) and form the basis of the following major conclusions.

- In intercountry correlation studies, diets high in meat—a major source of animal protein—have a strong positive association with increased atherosclerotic coronary artery disease and certain cancers, notably breast and colon cancer. Such diets are often characterized by a high content of saturated fatty acids and cholesterol, which probably accounts for a large part of the association with coronary heart disease, and by a high content of total fat, which is directly associated with the risk of these cancers. However, these diets also tend to have low levels of plant foods, the consumption of which is inversely associated in epidemiologic and animal studies with the risk of heart disease and certain cancers. Total serum cholesterol can be reduced in people with high blood cholesterol by replacing animal foods in their diet with plant foods.
- High protein intake can lead to increased urinary calcium excretion. The impact of this finding on the development of osteoporosis in the general population is unclear.
- The data linking elevated intakes of animal protein to increased risk of hypertension and stroke are weak, and no plausible mechanisms have been posited for either effect.

Energy

The following conclusions are based on assessment of the roles of energy intake and expenditure

in chronic disease risk as described in Chapters 6 (Calories) and Chapter 21 (Obesity and Eating Disorders).

- Positive energy balance can result from increased energy intake, reduced energy expenditure, or both, and over the long term, can lead to obesity and its associated complications.
- Although data from clinical and animal studies demonstrate that overfeeding leads to obesity, increased body weight in cross-sectional and longitudinal population surveys of adults cannot be accounted for by increased energy intake. Thus, it is likely that obesity develops in adult life either because of reduced physical activity, or overfeeding, or both. Obesity is enhanced not only by this energy imbalance but also by a genetic predisposition to obesity and altered metabolic efficiency.
- Epidemiologic studies indicate that increased energy expenditure is inversely associated with the risk of coronary heart disease.
- Epidemiologic and clinical studies and some experiments in animals demonstrate that obesity is associated with an increased risk of noninsulin-dependent diabetes mellitus, hypertension, gallbladder disease, endometrial cancer, and osteoarthritis. It may also be associated with a higher risk of coronary heart disease and postmenopausal breast cancer.
- Studies in humans suggest that fat deposits in the abdominal region pose a higher risk of noninsulin-dependent diabetes mellitus, coronary heart disease, stroke, hypertension, and increased mortality than do fat deposits in the gluteal or femoral regions.
- Experience in long-term management of obesity indicates that neither frequent fluctuations in body weight nor extreme restrictions of food intake are desirable.
- Long-term follow-up studies indicate that extreme leanness is associated with increased mortality and that the causes of mortality are different from those associated with excess weight.
- The specific causes of obesity are not well known, although some obese people clearly consume more energy compared to people of normal weight, whereas others are very sedentary or may have increased metabolic efficiency. Compared to maintenance of stable weight, weight gain in adult life is associated with a greater risk of cardiovascular disease, noninsulin-dependent diabetes mellitus, hypertension, gallbladder disease, and endometrial cancer. Certain risk factors—e.g., high serum cholesterol, elevated serum glucose, and high blood pressure—can be curtailed by weight reduction in overweight adults.

Alcoholic Beverages

The extensive data on the health effects of alcohol consumption are examined in Chapters 16 (Alcohol), 19 (Atherosclerotic Cardiovascular Diseases), 20 (Hypertension), 22 (Cancer), and 25 (Hepatobiliary Disease). Following are the committee's major conclusions related to alcohol.

- When consumed in excess amounts, alcohol replaces essential nutrients including protein and micronutrients and can lead to multiple nutrient deficiencies.
- Sustained, heavy intake of alcoholic beverages leads to fatty liver, alcoholic hepatitis, and cirrhosis. It also increases the risk of cancers of the oral cavity, pharynx, esophagus, and larynx, especially in combination with cigarette smoking, because the effects on cancer risk are synergistic. There is some epidemiologic evidence that alcohol consumption is also associated with primary liver cancer and that moderate beer drinking is associated with rectal cancer. The association of alcohol consumption with increased risk of pancreatic or breast cancer is less clear.
- Excessive alcohol consumption is associated with an increased incidence of coronary heart disease, hypertension, stroke, and osteoporosis.
- Alcohol consumption during pregnancy can damage the fetus, cause low infant birth weight, and lead to fetal alcohol syndrome. No safe level of alcohol intake during pregnancy has been determined.

Salt and Related Compounds

The following conclusions derive from the evidence on salt and related compounds and their relation to chronic diseases. This evidence is reviewed in Chapters 15 (Electrolytes), 20 (Hypertension), and 22 (Cancer).

- Blood pressure levels are strongly and positively correlated with the habitual intake of salt. In populations with a sustained salt intake of 6 g or more per day, blood pressure rises with age and hypertension is frequent, whereas in populations consuming less than 4.5 g of salt per day, the age-related rise in blood pressure is slight or absent and the frequency of hypertension is uniformly low. Clinical studies demonstrate that once hypertension is established, it cannot always be fully

corrected by resumption of a moderately low (<4.5 g/day) salt intake.

- Although clinical and epidemiologic studies indicate that some people are more susceptible to salt-induced hypertension than others, there are no reliable markers to predict individual responses. Epidemiologic evidence suggests that blacks, people with a family history of hypertension, and all those over age 55 are at a higher risk of hypertension.
- Epidemiologic and animal studies indicate that the risk of stroke-related deaths is inversely related to potassium intake over the entire range of blood pressures, and the relationship appears to be dose dependent. The combination of a low-sodium, high-potassium intake is associated with the lowest blood pressure levels and the lowest frequency of stroke in individuals and populations. Although the effects of reducing sodium intake and increasing potassium intake would vary and may be small in some individuals, the estimated reduction in stroke-related mortality for the population is large.
- A high salt intake is associated with atrophic gastritis in epidemiologic and animal studies, and there is also epidemiologic evidence that a high salt intake and frequent consumption of salt-cured and salt-pickled foods is associated with an elevated incidence of gastric cancer. The specific causative agents in these foods have not been fully identified.

Minerals and Trace Elements

The conclusions listed below are based on a review of the evidence on calcium, magnesium, trace elements, and chronic diseases discussed in Chapters 13 (Minerals), 14 (Trace Elements), 20 (Hypertension), 22 (Cancer), and 23 (Osteoporosis).

- Epidemiologic, clinical, and animal studies suggest that sustained low calcium intake is associated with a high frequency of fractures in adults, but the role of dietary calcium in the development of osteoporosis and the potential benefits of calcium supplements—in amounts that exceed the Recommended Dietary Allowances (RDAs)—in decreasing the risk of osteoporosis are unclear.
- Some epidemiologic studies have shown an association between calcium intake and blood pressure, but a causal association between low calcium intake and high blood pressure has not been established.
- A few data from epidemiologic and animal studies suggest that a high calcium intake may protect against colon cancer, but the evidence is preliminary and inconclusive.
- Unequivocal evidence from epidemiologic and clinical studies indicates that fluoridation of drinking water supplies at a level of 1 ppm protects against dental caries. Such concentrations are not associated with any known adverse health effects, including cancer.
- Low selenium intake in epidemiologic and animal studies and low selenium levels in human sera have been associated with an increased risk of several cancers. Moreover, some studies in animals suggest that diets supplemented with large doses of selenium offer protection against certain cancers. These data should be extrapolated to humans with caution, however, because high doses of selenium can be toxic.
- The data on most trace elements examined in this report (e.g., copper and cadmium) are too limited or weak to permit any conclusions about their effects on chronic disease risk.

Dietary Supplements

Claims for the health benefits of dietary supplements have drawn substantial attention in recent decades. The committee has reached the following conclusion on the basis of the evidence reviewed in Chapter 18 (Dietary Supplements).

- A large percentage of people in the United States take dietary supplements, but not necessarily because of nutrient needs. The adverse effects of large doses of certain nutrients (e.g., vitamin A) are well documented. There are no documented reports that daily multiple vitamin-mineral supplements, equaling no more than the RDA for a particular nutrient, are either beneficial or harmful for the general population. The potential risks or benefits of the long-term use of small doses of supplements have not been systematically examined.

Coffee, Tea, and Other Nonnutritive Dietary Components

The following major conclusions pertaining to coffee, tea, and other nonnutritive dietary components are based on a review of the evidence in Chapter 17 (Coffee, Tea, and Other Nonnutritive Dietary Components).

- Coffee consumption has been associated with slight elevations in serum cholesterol in some epidemiologic studies. Epidemiologic evidence linking coffee consumption to the risk of coronary

heart disease and cancer in humans is weak and inconsistent.

- Tea drinking has not been associated with an increased risk of any chronic disease in humans.
- The use of such food additives as saccharin, butylated hydroxyanisole, and butylated hydroxytoluene does not appear to have contributed to the overall risk of cancer in humans. However, this lack of evidence may be due to the relatively recent use of many of these substances or to the inability of epidemiologic techniques to detect the effects of additives against the background of common cancers from other causes. The association between food additives and cancer is also complicated by the long latency period between initial exposure to a carcinogen and the subsequent development of cancer.
- A number of environmental contaminants (e.g., some organochlorine pesticides, polychlorinated biphenyls, and polycyclic aromatic hydrocarbons) cause cancer in laboratory animals. The committee found no evidence to suggest that any of these compounds *individually* makes a major contribution to the risk of cancer in humans; however, the risks from simultaneous exposure to several compounds and the potential for adverse effects in occupationally exposed people have not been adequately investigated.
- Certain naturally occurring contaminants in food (e.g., aflatoxins and *N*-nitroso compounds) and nonnutritive constituents (e.g., hydrazines in mushrooms) are carcinogenic in animals and thus pose a potential risk of cancer in humans. Naturally occurring compounds shown to be carcinogenic in animals have been found in small amounts in the average U.S. diet. There is no evidence thus far that any of these substances *individually* makes a major contribution to cancer risk in the United States.
- Most mutagens detected in foods have not been adequately tested for carcinogenic activity. Although mutagenic substances are generally suspected of having carcinogenic potential, it is not yet possible to assess their contribution to the incidence of cancer in the United States.
- Overall, there is a shortage of data on the complete range of nonnutritive substances in the diet and thus no reliable estimates can be made of the most significant exposures. Exposure to nonnutritive chemicals individually, in the minute quantities normally present in the average diet, is unlikely to make a major contribution to the overall cancer risk to humans in the United States. The risk from simultaneous exposure to many such compounds cannot be quantified on the basis of current evidence.

THE COMMITTEE'S DIETARY RECOMMENDATIONS

The dietary recommendations of the Committee on Diet and Health, given below, are directed to healthy, North American adults and children. Wherever evidence permits, the committee attempts to identify the special dietary needs of population subgroups at high risk for specific diseases or with different dietary requirements because of age, sex, or physiological status. The special dietary needs of the elderly are largely unknown.

As discussed in Chapter 28, the quantities proposed in the committee's recommendations are goals for intake by *individuals*. To achieve these goals, the mean intake by the *population* (the public health goal) would have to be higher or lower than the recommended intake for individuals, depending on the direction of the proposed dietary modification. For example, a recommendation that all *individuals* should reduce their fat intake to 30% or less of calories can be expected to lead to a population mean intake substantially *below* 30% of calories from fat. Similarly, a recommendation that individuals increase their carbohydrate intake to more than 55% of total calories can be expected to lead to a population mean intake clearly above 55% of calories from carbohydrates. Thus, the guidelines for individuals differ somewhat from the public health (population) goals, which need to be more stringent in order to achieve the goals for individuals.

The extent to which the public health goal for a nutrient differs from the goal for individuals in the population will depend on the distribution of intake for that nutrient in the population. In most cases, however, the variation in nutrient intakes in the population is not well known.

The recommendations in this report are the product of a systematic and extensive analysis of the literature by a multidisciplinary committee that considered the criteria and the process for arriving at recommendations and documented the extensive literature on which they are based. They are generally in agreement with the advice provided by other expert panels in the United States and abroad although in most cases they include more specific quantitative recommendations. These recommendations are appropriate for current patterns of dietary intake and disease morbidity and mortality in the United States and are

22-941 - 90 - 6

based on conclusions regarding the association of dietary factors with the entire spectrum of chronic diseases. They take into account competing risks for different diseases as well as nutrient interactions. These recommendations should be reexamined as new knowledge is acquired and as the patterns of morbidity and mortality change over the next decades.

The committee's recommendations are presented in a logical sequence that also reflects a general order of importance. For example, all dietary macrocomponents are addressed first. Among these, highest priority is given to reducing fat intake, because the scientific evidence concerning dietary fats and other lipids and human health is strongest and the likely impact on public health the greatest. Lower priority is given to recommendations on other dietary components, because they are derived from weaker evidence or because the public health impact is likely to be comparatively less. Where the evidence is strongest, the committee presents quantitative recommendations. It recognizes that setting specific quantitative goals is somewhat arbitrary and is based on informed judgment rather than on scientifically derivable formulas; however, quantification facilitates translation of goals into dietary patterns and food choices. Goals are needed to develop and evaluate programs aimed at achieving dietary changes and serve as the basis for regulatory actions such as those relating to food labeling and the validity of health claims for foods and nutrients.

The committee's recommendations derive from an assessment of the evidence on chronic diseases, but should be used in combination with the RDAs to achieve an optimal and highly desirable dietary pattern for the maintenance of good health. In the committee's judgment, these recommendations have the potential for a substantial reduction in the risk of diet-related chronic diseases in the general population.

- *Reduce total fat intake to 30% or less of calories. Reduce saturated fatty acid intake to less than 10% of calories, and the intake of cholesterol to less than 300 mg daily. The intake of fat and cholesterol can be reduced by substituting fish, poultry without skin, lean meats, and low- or nonfat dairy products for fatty meats and whole-milk dairy products; by choosing more vegetables, fruits, cereals, and legumes; and by limiting oils, fats, egg yolks, and fried and other fatty foods.*

A large and convincing body of evidence from studies in humans and laboratory animals shows that diets low in saturated fatty acids and cholesterol are associated with low risks and rates of atherosclerotic cardiovascular diseases. High-fat diets are also linked to a high incidence of some types of cancer and, probably, obesity. Thus, reducing total fat and saturated fatty acid intake is likely to lower the rates of these chronic diseases. Fat intake should be reduced by curtailing the major sources of dietary fats rather than by eliminating whole categories of foods. For example, by substituting fish, poultry without skin, lean meats, and low- or nonfat dairy products for high-fat foods, one can lower total fat and saturated fatty acid intake while ensuring an adequate intake of iron and calcium—two nutrients of special importance to women. Dietary fat can also be reduced by limiting intake of fried foods, baked goods containing high levels of fat, and spreads and dressings containing fats and oils.

Different types of fatty acids have different effects on health. Saturated fatty acids and dietary cholesterol tend to increase total and LDL serum cholesterol and, consequently, the risk of cardiovascular disease. The extent of this activity differs among saturated fatty acids; palmitic, myristic, and lauric acids have the greatest cholesterol-raising effect. The main dietary sources of these cholesterol-raising saturated fatty acids are dairy and meat products and some vegetable oils, such as coconut, palm, and palm-kernel oils. Dietary cholesterol is found mainly in egg yolks, certain shellfish, organ meats, and, to a lesser extent, in other meats and dairy products. Thus, the intake of these foods should be curtailed.

Monounsaturated fatty acids are found in a variety of foods but are especially abundant in olive oil and canola oil. Polyunsaturated fatty acids are of two types—omega-6 and omega-3; both are essential nutrients and cannot be synthesized endogenously. Omega-6 polyunsaturated fatty acids are common in several plant oils, including corn, safflower, soybean, and sunflower oils. Omega-3 polyunsaturated fatty acids are found in cold-water marine fish (such as salmon and mackerel) and in some plant oils (e.g., soybean and canola oils). Omega-6 polyunsaturated fatty acids and monounsaturated fatty acids (and carbohydrates) lower LDL cholesterol when substituted for saturated fatty acids. Omega-3 polyunsaturated fatty acids also lower LDL-cholesterol when substituted for saturated fatty acids, but they are more effective in lowering elevated serum triglyceride levels. Although consumption of fish one or more times a week has been associated with a reduced risk of coronary heart disease, the committee does not

recommend the use of concentrated fish oil supplements, because there is insufficient evidence that they are beneficial and the absence of long-term adverse effects has not been established.

The evidence linking high-fat diets to increased cancer risk is less persuasive than that associating saturated fatty acids and dietary cholesterol to coronary heart disease, but the weight of evidence indicates that high-fat diets are associated with a higher risk of several cancers, especially of the colon, prostate, and breast. Most evidence from studies in humans suggests that total fat or saturated fatty acids adversely affect cancer risk. No studies in humans have yet examined the benefits of changing to low-fat diets; however, such evidence exists from experiments in animals. The combined evidence from epidemiologic and laboratory studies suggests that reduction of total fat is likely to reduce the risk of these cancers.

Epidemiologic data on the possible association of low serum cholesterol levels with an increased incidence of and mortality from cancer in general or colon cancer in men in particular are inconsistent and do not suggest a causal association. Rather, they indicate that the lower serum cholesterol levels in some of these studies were in part the consequence of undetected cancers. The overall evidence indicates that dietary modification to lower serum total cholesterol and coronary heart disease risk is likely to reduce the risk of colon cancer without increasing the risk of other cancers.

Animal studies also suggest that high-fat diets may lead to obesity, possibly because dietary fat is converted to body fat more efficiently than are other sources of calories. Short-term clinical studies in humans indicate that a substantial reduction in fat intake may be accompanied by weight loss; however, reduced caloric intake was observed in some of these reports and although not specifically noted is likely to have occurred in others. This indicates that a substantial reduction in fat intake may result in overall caloric reduction, perhaps because of the caloric density of dietary fat. From a public health perspective, this phenomenon may be important, regardless of whether fat reduction per se results in weight loss or that weight loss results from an overall reduction in caloric intake.

In the committee's judgment, concerns that reduced fat intake may curtail intake of meats and dairy products and thus limit intakes of iron and calcium by women and children or that young children on reduced-fat diets might not obtain adequate calories to support optimal growth and development are not justified. Fat intake can be reduced to approximately 30% of calories without risk of nutrient deficiency, and this level of fat intake after infancy has not been associated with any detrimental effects. Furthermore, adequate caloric intake can readily be maintained in children on diets containing 30% of calories from fat.

Although the committee recommends that the total fat intake of individuals be 30% or less of calories, there is evidence that further reduction in fat intake may confer even greater health benefits. However, the recommended levels are more likely to be adopted by the public because they can be achieved without drastic changes in usual dietary patterns and without undue risk of nutrient deficiency. Furthermore, they permit gradual adaptation to lower-fat diets as more lower-fat foods become available on the market. The committee recommends that people who should not lose weight should compensate for the caloric loss resulting from decreased fat intake by consuming greater amounts of foods containing complex carbohydrates (e.g., vegetables, certain fruits, legumes, and whole-grain cereal products).

Although the committee recommends that saturated fatty acid intake be maintained at less than 10% of total calories by individuals, it is highly likely that further reduction, to 8 or 7% of calories or lower, would confer greater health benefits. Such further reductions can best be achieved by substituting additional complex carbohydrates and monounsaturated for saturated fatty acids in the diet. Larger reductions in cholesterol intakes—e.g., to 250 or 200 mg or even less/day—may also confer health benefits.

The committee recommends that the polyunsaturated fatty acid intake of individuals not exceed 10% of total calories and that polyunsaturated fatty acid intake in the population be maintained at current levels in the U.S. diet, i.e., an average of approximately 7% of total calories. (The requirement for omega-6 polyunsaturated fatty acids can be met by 1 to 2% of calories as linoleic acid.) Concern that an increase in polyunsaturated fatty acid intake may increase risk of certain cancers derives primarily from studies of animals on very-high-polyunsaturated fatty acid diets. Given the absence of human diets naturally very high in total polyunsaturated fatty acids and the lack of information about the long-term consequences of high polyunsaturated fatty acid intake (see Chapter 7), it seems prudent to recommend that polyunsaturated fatty acid intake not be increased above the current average in the U.S. population. However, since most of the polyunsaturated fatty acids in the

current U.S. diet are of the omega-6 rather than the omega-3 type, and since the committee's recommendation is directed mainly at omega-6 polyunsaturated fatty acids, any increase in total polyunsaturated fatty acid resulting from an increase in foods containing omega-3 polyunsaturated fatty acids (e.g., by eating more fish containing such fatty acids) is reasonable.

- *Every day eat five or more servings* of a combination of vegetables and fruits, especially green and yellow vegetables and citrus fruits. Also, increase intake of starches and other complex carbohydrates by eating six or more daily servings of a combination of breads, cereals, and legumes.*

The committee recommends that the intake of carbohydrates be increased to more than 55% of total calories by increasing primarily complex carbohydrates. Fats and carbohydrates are the two major sources of calories in the diet. National food consumption surveys indicate that the content of the average U.S. diet is high in fat and low in complex carbohydrates (e.g., starches, vegetables, legumes, breads, cereals, and certain fruits). Green and yellow vegetables; fruits, especially citrus fruits; legumes; and whole-grain cereals and breads, which constitute a small portion of the present U.S. diet, generally contain low levels of fat; thus, they are good substitutes for fatty foods and good sources of several vitamins, minerals, complex carbohydrates, and dietary fiber. The recommended number of servings is derived from experience in planning nutritionally balanced diets that would meet the committee's dietary recommendations. The amounts recommended would facilitate an increase in the total carbohydrate and complex carbohydrate content of the diet, make up for the caloric deficit due to fat reduction, and supply sufficient quantities of essential vitamins and minerals. The committee does not recommend increasing the intake of added sugars, because their consumption is strongly associated with dental caries, and, although they are a source of calories for those who may need additional calories, they provide no nutrients. Furthermore, foods high in added sugars (e.g., desserts and baked goods) are generally also high in fat.

Studies in various parts of the world indicate that people who habitually consume a diet high in plant foods have low risks of atherosclerotic cardiovascular diseases, probably largely because such diets are usually low in animal fat and cholesterol, both of which are established risk factors for atherosclerotic cardiovascular diseases. Some constituents of plant foods, e.g., soluble fiber and vegetable protein, may also contribute—to a lesser extent—to the lower risk of atherosclerotic cardiovascular diseases. The mechanism for the link between frequent consumption of vegetables and fruits, especially green and yellow vegetables and citrus fruits, and decreased susceptibility to cancers of the lung, stomach, and large intestine is not well understood because the responsible agents in these foods and the mechanisms for their protective effect have not been fully determined. However, there is strong evidence that a low intake of carotenoids, which are present in green and yellow vegetables, contributes to an increased risk of lung cancer. Fruits and vegetables also contain high levels of fiber, but there is no conclusive evidence that the dietary fiber itself, rather than other nutritive and nonnutritive components of these foods, exerts a protective effect against these cancers. The committee does not recommend the use of fiber supplements.

Vegetables and fruits are also good sources of potassium. A diet containing approximately 75 mEq of potassium (i.e., approximately 3.5 g of elemental potassium) daily may contribute to reduced risk of stroke, which is especially common among blacks and older people of all races. Potassium supplements are neither necessary nor recommended for the general population.

- *Maintain protein intake at moderate levels.*

Protein is an essential nutrient, and protein-containing foods are important sources of essential amino acids in the diet. However, because there are no known benefits and possibly some risks in consuming diets with a high animal protein content, the committee recommends that protein intake not be increased to compensate for the caloric loss that would result from the recommended reduction in fat intake. In general, average protein intake by adults in the United States considerably exceeds the RDA, which is 0.8 g/kg of desirable body weight for adults. The committee recommends maintaining total protein intake at levels lower than twice the RDA for all age groups (e.g., less than 1.6 g/kg body weight for adults).

Increased risks of certain cancers and coronary heart disease have been associated in some epidemiologic studies with diets high in meat and, as a

*An average serving is equal to a half cup for most fresh or cooked vegetables, fruits, dry or cooked cereals and legumes, one medium piece of fresh fruit, one slice of bread, or one roll or muffin.

consequence, in animal protein, and with high protein intake alone in laboratory studies. It is not known whether these adverse effects are due solely to the usually high total-fat, saturated fatty acid, and cholesterol content of diets that are rich in meat or animal protein, or to what extent protein per se or other factors also contribute. High protein intake may also lead to increased urinary calcium loss.

The committee is aware of concerns among some scientists that animal protein restriction might curtail the ability of some population subgroups with habitually lower protein intakes (e.g., women and the elderly) to meet the RDA for certain other essential nutrients such as iron. However, the recommendation to maintain intake below twice the RDA for all age groups would require no reduction of current average intakes in the United States. The committee does not recommend against eating meat; rather, it recommends consuming lean meat in smaller and fewer portions than is customary in the United States.

• *Balance food intake and physical activity to maintain appropriate body weight.*

Excess weight is associated with an increased risk of several chronic disorders, including noninsulin-dependent diabetes mellitus, hypertension, coronary heart disease, gallbladder disease, osteoarthritis, and endometrial cancer. The risks appear to decline following a sustained reduction in weight. Increased abdominal fat carries a higher risk for these disorders than do comparable fat deposits in the hips and thighs. New standards for healthy body composition take into account such differences in regional body fat distribution as well as weight-to-height ratios. Neither large fluctuations in body weight nor extreme restrictions in food intake are desirable.

In the U.S. population and other westernized societies, body weight and body mass index are increasing while the overall caloric intake of the population is decreasing. These trends as well as the association of moderate, regular physical activity with reduced risks of heart disease lead to the committee's recommendation that the U.S. population increase its physical activity level and that all healthy people maintain physical activity at a moderately active level, improve physical fitness, and moderate their food intake to maintain appropriate body weight. For adult men and women of normal weight, this will also allow the ingestion of adequate calories to meet all known nutrient needs. Overweight people should increase their physical activity and reduce their caloric intake, and people with a family history of obesity should avoid calorically dense foods and select low-fat foods.

• *The committee does not recommend alcohol consumption. For those who drink alcoholic beverages, the committee recommends limiting consumption to the equivalent of less than 1 ounce of pure alcohol in a single day. This is the equivalent of two cans of beer, two small glasses of wine, or two average cocktails. Pregnant women should avoid alcoholic beverages.*

Excessive alcohol drinking increases the risk of heart disease, high blood pressure, chronic liver disease, some forms of cancer, neurological diseases, nutritional deficiencies, and many other disorders. Even moderate drinking carries some risk in circumstances that require neuromotor coordination and judgment, e.g., driving vehicles, working around machinery, and piloting airplanes or boats. Consumption of even small amounts of alcohol can lead to dependence. Approximately 10% of those who consume alcoholic beverages in the United States are alcoholics. Pregnant women and women who are attempting to conceive should avoid alcoholic beverages because there is a risk of damage to the fetus and no safe level of alcohol intake during pregnancy has been established.

Although several studies show that moderate alcohol drinking is associated with a lower coronary heart disease risk, it would be unwise to recommend moderate drinking for those who do not drink because, in the committee's judgment, a causal association has not been established and because even moderate drinking poses certain other risks, including the risk of alcohol addiction.

• *Limit total daily intake of salt (sodium chloride) to 6 g or less. Limit the use of salt in cooking and avoid adding it to food at the table. Salty, highly processed salty, salt-preserved, and salt-pickled foods should be consumed sparingly.*

Studies in human populations in different parts of the world show that a diet containing more than 6 g of salt per day is associated with elevated blood pressure, and many Americans habitually exceed this level. It is probable that susceptibility to salt-induced hypertension (salt sensitivity) is genetically determined, but no reliable genetic marker has yet been identified. Thus, those who are most susceptible to developing salt-induced hypertension, and therefore likely to benefit most from this recommendation, cannot yet be identified. In salt-sensitive people, the recommended level of salt intake is unlikely to contribute to

blood pressure elevation and may even lead to blood pressure reductions. In the general population, the recommended level will have no detrimental effect. The committee is aware that a greater reduction in salt intake (i.e., to 4.5 g or less) would probably confer greater health benefits than its present recommendation, but chose 6 g as an initial goal that can be achieved more readily. This does not preclude a subsequent recommendation for further reduction.

The evidence linking salt intake per se to stomach cancer is less persuasive than that for salt and hypertension. There is consistent evidence, however, that frequent consumption of salt-preserved or salt-pickled foods increases the risk of stomach cancer. The specific causative agents in those foods have not been identified.

• *Maintain adequate calcium intake.*

Calcium is an essential nutrient; it is necessary for adequate growth and skeletal development. Certain segments of the population, especially women, because of their low caloric intake, and adolescents, because of their higher nutrient requirements, need to make careful food choices to obtain adequate calcium from the food supply. The committee recommends consumption of low- or nonfat dairy products and dark-green vegetables, which are rich sources of calcium and can assist in maintaining calcium intake at approximately RDA levels. Although low calcium intake is associated with a higher frequency of fractures and possibly with high blood pressure, the potential benefits of calcium intakes above the RDAs to prevent osteoporosis or hypertension are not well documented and do not justify the use of calcium supplements.

• *Avoid taking dietary supplements in excess of the RDA in any one day.*

A large percentage of the U.S. population consumes some vitamin or mineral supplement daily. The supplements are often self-prescribed and not based on known nutrient deficiencies. It is not known what, if any, benefits or risks accrue to individuals or the general population from taking small doses of supplements. Some population subgroups (e.g., those suffering from malabsorption syndromes) may require supplements, but they should take them only under professional supervision. A single daily dose of a multiple vitamin-mineral supplement containing 100% of the RDA is not known to be harmful or beneficial; however, vitamin–mineral supplements that exceed the RDA and other supplements (such as protein powders, single amino acids, fiber, and lecithin) not only have no known health benefits for the population but their use may be detrimental to health. The desirable way for the general public to obtain recommended levels of nutrients is by eating a variety of foods.

Thus, the committee supports the general scientific opinion and the opinions of several other expert panels that have recently commented specifically on supplement use. It emphasizes, however, that the long-term health effects (risks and benefits) of supplements have not been adequately studied.

• *Maintain an optimal intake of fluoride, particularly during the years of primary and secondary tooth formation and growth.*

There is convincing evidence that consumption of optimally fluoridated water (i.e., 0.7 to 1.2 ppm fluoride, depending on ambient temperature) significantly reduces the risk of dental caries in people of all ages, especially in children during the years of primary and secondary tooth formation and growth. There is no evidence that such fluoride concentrations have any adverse effects on health, including cancer risk. In the absence of optimally fluoridated water, the committee supports the use of dietary fluoride supplements in the amounts generally recommended by the American Dental Association, the American Academy of Pediatrics, and the American Academy of Pediatric Dentistry.

IMPLICATIONS OF RECOMMENDATIONS FOR FOOD CHOICES

What do the committee's recommendations imply with regard to selection of foods and food groups? To some extent, this issue is addressed under each recommendation. Therefore, only a synthesis is provided here. Principles of food selection will also be explained in more detail in the committee's forthcoming report to the general public.

In summary, the diet recommended by the committee should contain moderately low levels of fat, with special emphasis on restriction of saturated fatty acids and cholesterol; high levels of complex carbohydrates; only moderate levels of protein, especially animal protein; and only low levels of added sugars. Caloric intake and physical activity should be balanced to maintain appropriate body weight. The recommendation to maintain total fat intake at or below 30% of total caloric

intake and saturated fatty acid intake at less than 10%, combined with the recommendation to maintain protein intake only at moderate levels, means that for most North Americans it will be necessary to select leaner cuts of meat, trim off excess fat, remove skin from poultry, and consume fewer and smaller portions of meat and poultry. Fish and many shellfish are excellent sources of low-fat protein. By using plant products (e.g., cereals and legumes) instead of animal products as sources of protein, one can also reduce the amount of saturated fatty acids and cholesterol in the diet.

Dairy products are an important source of calcium and protein, but whole milk, whole-milk cheeses, yogurt, ice cream, and other milk products are also high in saturated fatty acids. Therefore, low-fat or skim milk products should be substituted. Furthermore, it is desirable to change from butter to margarine with a low saturated fatty acid content, to use less oils and fats in cooking and in salad dressings, and to avoid fried foods.

For most people, the recommended restriction of fat intake, coupled with the recommendation for moderation in protein intake, implies an increase in calories from carbohydrates. These calories should come from an increased intake of whole-grain cereals and breads rather than from foods or drinks containing added sugars. For example, bakery goods, such as pies, pastries, and cookies, although they provide complex carbohydrates also tend to contain high levels of total fat, saturated fatty acids, and added sugars, all of which need to be curtailed to meet the committee's recommendations.

In general, vegetables and fruits are unlikely to contribute substantially to caloric intake but are major sources of vitamins, minerals, and dietary fiber. The committee places special emphasis on increasing consumption of green and yellow vegetables as well as citrus fruits, particularly since their consumption in North America is relatively low. The committee's recommendations would lead to a substantial increase in consumption frequency and portion sizes, especially of vegetables, for the average person. Thorough washing of fresh vegetables (especially leafy ones) and fruits will minimize the consumption of pesticide residues in the diet.

The need for restriction of certain dietary components—such as egg yolks; salt; salty, smoked, and preserved foods; and alcoholic beverages—is clearly explained in the recommendations. Further considerations include methods of preparation, cooking, and processing, which can have important effects on the composition of foods. The committee emphasizes the need to read the labels on prepared, formulated, and other processed foods to identify their contribution of nutrients in general and of salt, fats and cholesterol, and sugars in particular. With regard to the risk of chronic diseases, maximum benefit can be attained and any unknown, potentially harmful effects of dietary constituents minimized by selecting a variety of foods from each food group, avoiding excessive caloric intake (especially excessive intake of any one item or food group), and engaging regularly in moderate physical exercise.

IMPACT ON PUBLIC HEALTH: BENEFITS AND RISKS OF DIETARY MODIFICATION

The committee used several approaches and lines of evidence to assess potential adverse consequences of its dietary recommendations for the general population (see Chapter 28). For example, it examined the degree of concordance in death rates and mortality trends between the two leading diet-related causes of death—i.e., coronary heart disease and cancer—to assess the degree to which common dietary risk and protective factors may be operating. It also analyzed the possible adverse consequences of reducing the intake of total fat, saturated fatty acids, and cholesterol, which would lead to a reduction in serum cholesterol levels and in the risk of atherosclerotic cardiovascular disease.

In some studies, low serum cholesterol is associated with increased colon cancer mortality. However, this finding is inconsistent and the data do not suggest that lowering serum cholesterol by dietary modification would increase the risk of any cancer. Furthermore, the committee considered the effect of reducing total serum cholesterol on increasing risk of hemorrhagic stroke in hypertensives; the possible adverse effects of increased intakes of polyunsaturated fatty acids, carbohydrates, vegetables, and carotene and of moderate intakes of alcohol (as opposed to total avoidance); the effect of potential increases in exposure to pesticides; and the potential for nutrient deficiencies or toxicity among population subgroups (see Chapter 28). It concluded that despite using the worst-case hypothetical scenarios, the benefits of dietary modification far outweigh the potential for adverse effects, which is minimal if any, as summarized below.

The lines of evidence examined in Chapter 28 indicate that risk factors and protective character-

istics for the major diet-related chronic diseases and causes of death are concordant. In general, dietary intervention to reduce the risk of one disease (e.g., coronary heart disease) is also likely to reduce the risk of other diseases (e.g., several cancers).

Central to the committee's deliberations was the extent to which the overall risk of chronic diseases in the general U.S. population might be reduced by dietary modification. Because the role of dietary factors in the etiology of chronic diseases differs by factor and disease (see Major Conclusions), the impact of dietary modification on the risk of different diseases is likely to vary considerably.

As discussed in Chapter 28, the committee used several approaches in developing quantitative estimates of the potential public health impact if its dietary recommendations were to be fully adopted by the public. It recognized at the outset that the accuracy of such estimates is determined by the strength, consistency, and congruence of the evidence from a variety of sources, especially from extensive, long-term observations and dietary interventions in human populations, which provide the most reliable estimates of association. The best of these data pertain to serum cholesterol levels and the risk of coronary heart disease; those on dietary factors as they relate to coronary heart disease, cancer, and other major causes of mortality are not as extensive.

Estimates for the reduction of coronary heart disease risk in human populations can be derived by extrapolating the effects of a downward shift in average serum cholesterol levels, by comparing coronary heart disease risk in populations with greatly different saturated fatty acid or total fat intakes or wide ranges in mean serum cholesterol levels, or by examining the results of serum-cholesterol-lowering trials on cardiovascular disease incidence. The many drawbacks to these approaches are explained in Chapter 28. In general, however, by using these approaches, the committee estimates that its recommendations for reducing intake of saturated fatty acids, dietary cholesterol, and total fat could lead to at least a 10% reduction in serum cholesterol levels and a 20% reduction in coronary heart disease risk in the United States beyond the 1987 levels. More stringent dietary modification provides the potential for even greater reduction in coronary disease risk in the future. This underestimates the potential benefits of dietary modification because it only focuses on certain lipids and does not take into account the potential benefits of reductions in body weight and blood pressure in the population.

The picture is less clear for the risk of cancer and other chronic diseases. Some epidemiologists estimate that as much as 90% of all cancer in humans can be attributed to various environmental factors, including diet. Others attribute 30 to 40% of cancers in men and 60% of cancers in women to diet. Still others have estimated that 10 to 70% of the deaths from cancer could be prevented by dietary modifications, especially for cancers of the stomach, the large bowel, and to a lesser extent, the breast, the endometrium, and the lung.

The conclusions of the Committee on Diet and Health are in general agreement with those of the National Research Council's Committee on Diet, Nutrition, and Cancer, which in 1982 concluded that cancers of most major sites are influenced by dietary patterns. The data are not sufficient, however, to quantify the contribution of diet to the overall cancer risk or to determine the quantitative reduction in risk that might be achieved by dietary modifications. The committee notes that several countries with dietary patterns similar to those recommended in this report have about half the U.S. rates for diet-associated cancers. This suggests that the committee's dietary recommendations could have a substantial impact on reducing the risk of cancer in the United States.

For the other chronic diseases and conditions considered in this report (i.e., hypertension, obesity, osteoporosis, diabetes mellitus, hepatobiliary disease, and to a lesser extent, dental caries), the magnitude of risk reduction expected through full implementation of the committee's guidelines on diet and health cannot be reliably estimated at this time due to limitations in the data. Nevertheless, on the basis of its overall assessment of the data, the committee concludes that implementation of its dietary recommendations through readily available natural diets is likely to greatly reduce the overall risk of these chronic diseases without discernibly increasing the risk of any cause of death or disability.

In Chapter 28, the committee categorizes dietary factors according to the strength of the evidence and relates each to the risk of chronic diseases and the potential public health benefit of dietary modification. In the committee's judgment, modification of the total diet along the lines recommended in this report is necessary to achieve the maximum public health benefit; and among dietary factors, reduced intakes of total fat, satu-

rated fatty acids, and cholesterol are likely to have the greatest impact.

IMPLEMENTATION OF DIETARY RECOMMENDATIONS

What strategies are needed to implement the committee's dietary recommendations and what are their implications for different sectors of society? These issues are the subject of a separate study by the Food and Nutrition Board. Therefore, they only receive brief consideration below and in Chapter 28 of this report.

It is apparent to the committee and the Food and Nutrition Board that if one of our national goals is to reduce the risk of chronic diseases and if dietary modification is likely to assist in achieving that goal, then various sectors of society need to collaborate in implementing dietary recommendations of the type proposed by the committee. The committee is aware that many nutrition programs and regulatory actions that are already in place or under way under the auspices of government agencies and in the private sector are consistent with implementing the proposed recommendations. Nevertheless, it wishes to draw special attention to the following general issues.

A concerted effort will be needed to make the changes in the food supply and in nutrition policy and programs that will be required to increase the availability of low-fat and low-salt foods in supermarkets and in public eating facilities such as school cafeterias and restaurants. Consideration needs to be given to the most effective means of achieving such modification: through technological changes, massive public education efforts, legislative measures such as food labeling, or a combination of such strategies. Although the committee's report to the public, which will be issued in the near future, will explain its major conclusions and recommendations in lay terms, leaders in government agencies, the health professions, the food industry, and the mass media face the challenge of interpreting the committee's nine recommendations for the general public as well as for high-risk groups. They will need to convey in practical terms the concept of certainty or uncertainty of benefit, competing risks, dietary interactions, and target populations. There is a need to develop adequate educational tools and to identify the best means of educating and motivating the public. Health professionals, government agencies, and the industry must also undertake additional research to identify ways of effecting dietary change.

In the committee's judgment, it is feasible to implement the proposed recommendations within the framework of the average lifestyle in the United States, and the committee is encouraged by the knowledge that dietary habits in this country have already changed markedly in many ways that are consistent with these recommendations. To convey a full understanding of these recommendations to the public and to implement them will require close collaboration among government agencies, the food industry, health professionals (physicians, nutritionists, dietitians, and public health personnel), educational institutions, leaders in mass media, and the general public.

RESEARCH DIRECTIONS

Fundamental scientific discoveries generally occur in completely unexpected ways. Thus it is impossible to predict where the major discoveries will be made or which research directions will prove to be the most fruitful. Therefore, the committee does not wish to stifle creativity by specifying experimental protocols or directing research. Nevertheless, it is possible and desirable to propose a scheme for organizing research to seek more definitive data on the associations between diet and chronic diseases. The committee's conclusions and dietary recommendations reflect its assessment of current knowledge and actions justified now; they can be made more definitive only through additional research of the kind recommended in this section.

The seven categories of research proposed below are not presented in order of priority. Rather, taken together, they reflect a conceptual framework for interdisciplinary collaborative research that encompasses different kinds of investigations: short- and long-term experiments in vitro and in vivo, food consumption surveys, food composition analyses, descriptive and analytical epidemiologic studies, metabolic studies and clinical trials in humans, and social and behavioral research. More detailed and specific research recommendations are summarized in Chapter 28 and presented in Chapters 4 and 6 through 26.

- *Identification of foods and dietary components that alter the risk of chronic diseases and elucidation of their mechanisms of action.*

Much needed research falls in this category. Many dietary constituents are already known to play a role in the etiology of chronic diseases, but additional and more specific knowledge, especially

concerning mechanisms of action, will lead to more definitive conclusions and provide more precise guidance about ways to reduce the risk of different chronic diseases.

• *Improvement of the methodology for collecting and assessing data on the exposure of humans to foods and dietary constituents that may alter the risk of chronic diseases.*

Methodological shortcomings inhibit the interpretation and analysis of data and often prevent the derivation of precise conclusions about the association of diet and chronic diseases. Thus, the committee recommends that high priority be given to development of better methods for data collection, quantification of dietary exposures and effects, and data analysis.

• *Identification of markers of exposure and early indicators of the risk of various chronic diseases.*

This category of research is designated for two purposes: first, to circumvent the shortcomings of using the disease itself as the sole end point—i.e., because of the long latency period of many chronic diseases evidenced by the delay between dietary exposure and disease expression; and second, to circumvent problems due to exposure misclassification when dietary recall methods are used. In the committee's judgment, there is a pressing need to identify biochemical/biological markers of dietary exposure, early biological markers that can forecast the emergence of clinical disease, and genetic markers that can identify high-risk subgroups in the population. In addition, the committee proposes greater use of the techniques of molecular biology to study gene–nutrient interactions that can help characterize individual variability in nutrient requirements and response to various chronic diseases.

• *Quantification of the adverse and beneficial effects of diet and determination of the optimal ranges of intake of dietary macro- and microconstituents that affect the risk of chronic diseases.*

Although most dietary constituents are known to have some effect on the risk of certain chronic diseases, much less is known about the magnitude of this effect. The committee believes that there is a strong need to quantify these effects in order to estimate the contribution of diet to the risk of chronic diseases. These efforts should include a study of nutrient interactions, competing risks, and dose-response relationships. The ultimate aim of such research should be to determine the optimal ranges of intake of various dietary components for health maintenance, keeping in mind the desirability of identifying their effects and the shape of the dose-response curve.

• *Through intervention studies, assessment of the potential for chronic disease risk reduction.*

Carefully designed intervention studies should be conducted to assess the public health impact of dietary modification. Although many such studies have been conducted for heart disease, hypertension, dental caries, and obesity, and a few have focused on osteoporosis, no such long-term studies have yet been completed for cancer. The committee has considered whether priority should be given to additional large-scale trials or whether current knowledge is sufficient to undertake dietary interventions in the population and subsequently to assess their effectiveness by carefully monitoring trends in disease incidence and mortality.

Intervention trials should be undertaken only when a substantial body of data indicates a high likelihood of benefit without discernible risk. Such trials might be warranted to obtain more definitive data, especially because the kinds of diets tested in such trials might yield data about potential benefits of dietary intervention to simultaneously reduce the risk of multiple chronic diseases, but they should not be used as a basis for delaying prudent dietary modifications warranted by current knowledge. Any intervention studies should be accompanied by effective monitoring to assess disease incidence, prevalence, and mortality rates.

• *Application of knowledge about diet and chronic diseases to public health programs.*

Social and behavioral research should be undertaken to achieve a better understanding of factors that motivate people to modify their food habits. This knowledge is indispensable for designing effective public health programs to reduce the risk of chronic diseases. Furthermore, improved technologies are needed to increase the availability of foods that conform to the committee's dietary recommendations.

• *Expansion of basic research in molecular and cellular nutrition.*

The six categories described above focus on research to enhance knowledge of the interrelationship among dietary factors, chronic diseases, and health, and this research includes an understanding of the underlying mechanisms. The committee wishes to emphasize the need for such

fundamental research to advance our knowledge of basic cellular and molecular mechanisms. Research in disciplines ranging from the physical sciences, to biochemistry, physiology, applied biology, nutrition, medicine, epidemiology, biophysics, cellular and molecular biology, and genetics is needed to fill the gaps in our understanding of how dietary, environmental, and genetic factors interact to influence the risk of chronic diseases.

The committee hopes that the findings contained in this report will be as widely disseminated as possible and urges that all those with an interest in and responsibility for public health participate in this effort. Recognizing the limitations of current knowledge, it strongly believes that periodic updates of its findings will be necessary as new data emerge to shed more light on associations between diet and chronic diseases.

SIXTH PROGRESS REPORT

THE HUMAN NUTRITION RESEARCH AND INFORMATION MANAGEMENT SYSTEM, FY 1987

Department of Health and Human Services
U.S. Public Health Service
National Institutes of Health
November 1, 1988

TABLE OF CONTENTS

Executive Summary iii

Introduction 1

Current Status of the HNRIM System 1

Federal Expenditures for Nutrition Research and Training, FY 1987 2

Public Availability of the HNRIM Database 3

List of Tables

I. FY 1987 Expenditures and Number of Projects in Human Nutrition Research, Manpower Development, Training, and Education, by Federal Agencies. 4

II. FY 1986 Expenditures and Number of Projects in Human Nutrition Research, Manpower Development, Training, and Education, by Federal Agencies. 5

III. FY 1985 Expenditures and Number of Projects in Human Nutrition Research, Manpower Development, Training, and Education, by Federal Agencies. 6

IV. FY 1984 Expenditures and Number of Projects in Human Nutrition Research, Manpower Development, Training, and Education, by Federal Agencies. 7

V. FY 1983 Expenditures and Number of Projects in Human Nutrition Research, Manpower Development, Training, and Education, by Federal Agencies. 8

VI. FY 1987 Expenditures by Federal Agencies in Human Nutrition Research, Manpower Development, Training, and Education, by Area of Support 9

VII. FY 1987 Human Nutrition Research and Training Expenditures of Federal Agencies by Support Mechanism 10

Appendices

A. HNRIM Classification System. 11

B. Distribution of Human Nutrition Research and Training Projects by HNRIM Classification Code, FY 1987 15

C. Frequency of Use of HNRIM Data Items for Information Retrieval. 17

EXECUTIVE SUMMARY

Sixth Progress Report on the Human Nutrition Research and Information Management System, FY 1987

This report describes FY 1987 activities of the Human Nutrition Research and Information Management (HNRIM) system, a Federal government-wide, on-line data base created for the purpose of fiscal accounting, management, and control of cross-agency human nutrition research activities. The data base was developed pursuant to Section 1427 of the National Agricultural Research, Extension, and Teaching Policy Act of 1977 (7 U.S.C. 3177), as amended by Section 1425 of the National Agricultural Research, Extension, and Teaching Policy Act Amendments of 1981 (Title XIV of P.L. 97-98).

The HNRIM system operates under the auspices of the Interagency Committee on Human Nutrition Research (ICHNR). It resides on the National Institutes of Health (NIH) mainframe computer, and is updated yearly by the HNRIM System Coordinator, currently a staff member in the NIH Division of Nutrition Research Coordination. Fully operational since FY 1985, the HNRIM system encompasses data from six Cabinet-level agencies on approximately 4,000 Federally supported human nutrition research projects, including narrative descriptions for most projects. The information can be retrieved through an interactive, on-line inquiry system.

Entry of FY 1987 data into the HNRIM system was completed as of September 12, 1988. The most frequently queried research categories during FY 1987 were (in order of frequency): "Essential Minerals and Trace Elements"; "Nutrition and Function"; "Research on Nutritional Status"; "Vitamins"; and "Research on Dietary Practices, Food Consumption, and Determinants." The data base was queried a total of 115 times during FY 1987.

Tables of expenditures by agency and support mechanism are presented, as are tabulations of the number of research projects by HNRIM nutrition research classification code and agency. FY 1987 Federal nutrition research and training dollars totaled $356 million, representing an increase of 17 percent over the $305 million expended in FY 1986. In FY 1987, 79 percent of these funds were expended by the Department of Health and Human Services, 19 percent by the U.S. Department of Agriculture, and 1 percent by the Agency for International Development. The remaining agencies each had smaller programs that contributed less than 1 percent of total Federal nutrition research and training dollars.

Of the total FY 1987 Federal expenditure in support of nutrition research and training, $287 million supported extramural research; $61 million supported intramural research; $11 million supported research on public information and education; $4 million supported extramural training; $4 million supported research manpower development; and $1 million supported intramural training. The HHS was the lead in all categories of support for nutrition research and training except intramural research, in which USDA was the lead.

The HNRIM data base has been available to the public in computer-readable form on a fee basis since September 1986, through the National Technical Information Service of the Department of Commerce. In addition, plans are proceeding to publicly offer the data base through Dialog Information Retrieval Service, beginning sometime during FY 1989, as a subset of the Department of Agriculture's Current Research Information System (CRIS) data base.

Introduction

On July 23, 1982, the Secretaries of Agriculture and of Health and Human Services transmitted to Congress the "Plan for a Human Nutrition Research and Information Management (HNRIM) System." This plan was prepared pursuant to Section 1427 of the National Agricultural Research, Extension, and Teaching Policy Act of 1977 (7 U.S.C. 3177), as amended by Section 1425 of the National Agricultural Research, Extension, and Teaching Policy Act Amendments of 1981 (Title XIV of P.L. 97-98). That Section provides as follows:

Human Nutrition Research and Information Management System

> Section 1427. The Secretary [of Agriculture] and the Secretary of Health and Human Services shall formulate and submit to Congress, within one hundred and eighty days after the date of enactment of this section, a plan for a human nutrition research management system. This system shall be based on on-line data support capability allowing for fiscal accounting, management, and control of cross-agency human nutrition research activities. The plan shall provide for management activities of all agencies managing funds for human nutrition research activities under existing authorities and contain recommendations for any additional authorities necessary to achieve a human nutrition research management system.

The implementation of the plan calls for the submission of annual progress reports on the HNRIM system by the Departments of Agriculture and Health and Human Services. This report describes HNRIM system activities from October 1986 through September 1987 (FY 1987).

Current Status of the HNRIM System

The HNRIM system has been fully operational since FY 1985. It includes data on nutrition research and training expenditures from six Cabinet-level agencies [Health and Human Services (HHS), U.S. Department of Agriculture (USDA), Veterans Administration (VA), Agency for International Development (AID), Department of Defense (DOD), and Department of Commerce (DOC)]; it also includes data from the National Aeronautics and Space Administration (NASA) and National Science Foundation (NSF), when they sponsor nutrition research. The information provided for each project includes name, institution, and address of the principal investigator, title of the research project, sponsoring Federal agency, project number assigned by the agency, total fiscal year expenditures of the project, proportion of the project that is nutrition related, estimated nutrition expenditures, and nutrition classification code(s). In addition, abstracts are included for each project, where made available by the sponsoring agency. The information can be retrieved through an interactive query system.

The data base operates under the auspices of the Interagency Committee on Human Nutrition Research (ICHNR). It resides on the National Institutes of Health (NIH) mainframe computer, and is updated yearly by the HNRIM System Coordinator, currently a staff member in the NIH Division of Nutrition Research Coordination (formerly the Nutrition Coordinating Committee Office). Projects are selected for inclusion in the HNRIM system by the sponsoring agency, based upon a common definition of human nutrition research (Appendix A) agreed upon by the ICHNR.

The most recent annual submissions by each agency comprise the on-line HNRIM data base, with submissions from prior years preserved on computer tape for easy accessibility. At this writing, the on-line HNRIM data base contains FY 1987 data; data for fiscal years 1982-6 are preserved on tape and microfiche. Entry of FY 1987 data into the HNRIM system was

completed as of September 12, 1988, for all participating agencies. NASA and NSF submitted no nutrition research projects during FY 1987.

Appendix B shows numbers of FY 1987 projects in the on-line HNRIM data base in each nutrition research classification category. Table B-1 breaks this information down by participating HHS agency, while Table B-2 breaks it down by participating Federal agency. With respect to number of projects, the five leading categories for all participating agencies in FY 1987 were (in order of frequency): "Cancer and Nut[illegible]tion," "Other Conditions and Nutrition," "Lipids (Fats and Oils)," "Vitamins," and "Cardiovascular Diseases and Nutrition."

The HNRIM data base was queried 115 times during FY 1987. The most frequently queried data items were: Fiscal Year, Sponsoring Agency, Group, Nutrition Classification Code, and Project ID Number. The most frequently queried research categories, in order of frequency, were: "Essential Minerals and Trace Elements"; "Nutrition and Function"; "Research on Nutritional Status"; "Vitamins"; and "Research on Dietary Practices, Food Consumption, and Determinants." A complete analysis of the categories queried is presented in Appendix C. Virtually all queries were performed by the System Coordinator, either as part of the process of updating the data base, in support of reports and publications within the DNRC, or in response to queries or requests for searches by NIH personnel, other Federal agencies, higher administrative levels within HHS, and the public. HNRIM system data were utilized in such publications as the *Annual Report of the NIH Program in Biomedical and Behavioral Nutrition Research and Training; Nutrition Research at the NIH;* the *NIH Data Book*, and the *1987 Report on USDA Human Nutrition Research and Education Activities.*

Federal Expenditures for Nutrition Research and Training, FY 1987

Table I presents FY 1987 Federal nutrition research and training expenditures by agency. In FY 1987 a total of $356 million provided support for 3,738 projects. The HHS expended $281 million, or 79 percent of total funds, and funded 69 percent of all projects. Within HHS, NIH accounted for expenditures of $261 million, or 73 percent of Federal expenditures and 93 percent of HHS expenditures in nutrition research and training; the Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA), the Food and Drug Administration (FDA), and the National Center for Health Statistics (NCHS) expended 2 percent, 2 percent, and 1 percent, respectively, of all Federal nutrition research and training funds. The USDA expended $68 million, representing 19 percent of total funds and 26 percent of total project[illegible] The AID expended an estimated $4 million, or 1 percent of the funds, in support of [illegible]than 1 percent of the number of projects. The remaining agencies each had smaller programs that contributed less than 1 percent of total Federal nutrition research and training dollars.

Data for fiscal years 1986, 1985, 1984, and 1983 have been included for informational purposes, and are shown in Tables II, III, IV, and V, respectively. Analysis of Table I and II data for HHS, USDA, and AID, the three largest contributors of Federal dollars for nutrition research and training, shows increases of 21 and 10 percent and a decrease of 13 percent, respectively, for FY 1987 over FY 1986. Total Federal nutrition research and training expenditures increased 17 percent during the same time period.

In "real dollar" terms[1] (i.e., when dollars are adjusted for projected inflationary price increases of approximately 5 percent in the biomedical research and development sector), HHS nutrition

[1] Based on NIH Biomedical Research and Development Price Index, Fiscal Years 1978-88. Source: Office of Program Planning and Evaluation and the Division of Research Grants, NIH.

research and training dollars increased 16 percent; USDA nutrition research and training dollars increased 5 percent; AID nutrition research and training dollars decreased 17 percent; and total Federal nutrition research and training expenditures increased 11 percent, for FY 1987 over FY 1986.

Table VI presents FY 1987 nutrition expenditures in five categories of activities: extramural research, research manpower development, extramural training, intramural research and training, and research on public information and education. Funding for extramural research--i.e., research in undergraduate and graduate schools of nutrition, in basic science departments of universities, in schools of medicine, dentistry and public health, in other schools for health professionals, and in research facilities throughout the United States and in foreign countries--represented by far the largest category, at $287 million. (The bulk of this category was provided by NIH, which, consistent with Congressional guidance, obligates the majority of its research support to extramural research.) Funding for intramural research in government laboratories amounted to $61 million. Research manpower development funds and extramural training funds totaled $4 million each, and funds for intramural training totaled $1 million. Funds for research on public information and education totaled $11 million. (Values in the latter category, which overlaps all others shown in the table, are shown in parentheses because they are not added into the "total" column.) The HHS was the lead in all categories of support for nutrition research and training except intramural research, in which USDA was the lead.

Table VII indicates the distribution of Federal human nutrition research and training expenditures by support mechanism for FY 1987. Grants (investigator-initiated research) amounted to $221 million; intramural research and training totaled $62 million; research contracts accounted for expenditures of $36 million; and cooperative agreements totaled $25 million. Formula grants and interagency agreements accounted for $8 million and $4 million, respectively, of Federal nutrition research and training expenditures.

Public Availability of the HNRIM Database

Computer-readable copies of the HNRIM data base are available for sale to the general public through the National Technical Information Service (NTIS) of the Department of Commerce. Consistent with Federal policy established for the Federal Research in Progress (FRIP) System and for the USDA Current Research Information System (CRIS), expenditure figures on individual projects are not made publicly available. Currently, data for fiscal years 1982-6 are available through NTIS; FY 1987 data are undergoing final processing and should be available through NTIS in early 1989.

In July 1987, the ICHNR approved a joint proposal by USDA staff and the HNRIM System Coordinator that the HNRIM data base be made available to the public through Dialog Information Retrieval Service, as a part of USDA's CRIS database. It is anticipated that the process of converting HNRIM system data to a format compatible with that of the CRIS database will be completed, and FY 1987 HNRIM system data made available to the public through Dialog, during FY 1989. The data base will continue to reside on-line in the NIH mainframe computer (from which fiscal data will be available), and to be available for purchase through NTIS.

Table I
FY 1987 EXPENDITURES AND NUMBER OF PROJECTS IN HUMAN NUTRITION RESEARCH, MANPOWER DEVELOPMENT, TRAINING, AND EDUCATION BY FEDERAL AGENCIES

	Expenditures ($ in thousands)	% of Total Expenditures	Number of Projects	% of Total Projects
Department of Health and Human Services:				
National Institutes of Health	260,610+	73	2,437	65
Alcohol, Drug Abuse and Mental Health Administration	7,685	2	107	3
Food and Drug Administration	6,799	2	31	<1
National Center for Health Statistics	3,885	1	3	<1
Health Resources and Services Administration	1,147	<1	10	<1
Centers for Disease Control	561	<1	1	<1
Total HHS	280,687	79	2,589	69
U.S. Department of Agriculture	67,601	19	964	26
Agency for International Development	4,364	1	14	<1
Veterans Administration	2,021*	<1	162	4
Department of Commerce	946	<1	5	<1
Department of Defense	533	<1	4	<1
Total Federal Expenditures	356,152	100**	3,738	100**

+ Final figure; previously reported figures may differ
* Estimate
**Total imprecise due to rounding

Table II
FY 1986 EXPENDITURES AND NUMBER OF PROJECTS IN HUMAN NUTRITION RESEARCH, MANPOWER DEVELOPMENT, TRAINING, AND EDUCATION BY FEDERAL AGENCIES

	Expenditures ($ in thousands)	% of Total Expenditures	Number of Projects	% of Total Projects
Department of Health and Human Services:				
National Institutes of Health	212,978+	70	2,435	63
Food and Drug Administration	8,143	3	47	1
Alcohol, Drug Abuse and Mental Health Administration	7,548	2	99	3
Health Resources and Services Administration	1,151	<1	8	<1
National Center for Health Statistics	804	<1	4	<1
Centers for Disease Control	569	<1	1	<1
Total HHS	231,193	76	2,594	67
U.S. Department of Agriculture	61,265	20	1,003	26
Veterans Administration	5,500*	2	248	6
Agency for International Development	4,998	2	16	<1
Department of Defense	782	<1	7	<1
Department of Commerce	1,000	<1	2	<1
Total Federal Expenditures	304,738	100**	3,870	100**

+ Final figure; previously reported figures may differ
* Estimate
**Total imprecise due to rounding

Table III
FY 1985 EXPENDITURES AND NUMBER OF PROJECTS IN HUMAN NUTRITION RESEARCH, MANPOWER DEVELOPMENT, TRAINING, AND EDUCATION BY FEDERAL AGENCIES

	Expenditures ($ in thousands)	% of Total Expenditures	Number of Projects	% of Total Projects
Department of Health and Human Services:				
National Institutes of Health	207,315+	72	2,525	65
Alcohol, Drug Abuse and Mental Health Administration	6,479	2	88	2
Food and Drug Administration	6,159	2	39	1
Health Resources and Services Administration	1,129	<1	12	<1
Centers for Disease Control	395	<1	1	<1
Total HHS	221,477	76	2,665	68
U.S. Department of Agriculture	60,122	21	976	25
Veterans Administration	5,277*	2	239	6
Agency for International Development	3,522	1	15	<1
Department of Defense	1,150	<1	6	<1
Department of Commerce	397	<1	4	<1
Total Federal Expenditures	291,945	100**	3,905	100**

+ Final figure; previously reported figures may differ
* Estimate
**Total imprecise due to rounding

Table IV
FY 1984 EXPENDITURES AND NUMBER OF PROJECTS IN HUMAN NUTRITION RESEARCH, MANPOWER DEVELOPMENT, TRAINING, AND EDUCATION BY FEDERAL AGENCIES

	Expenditures ($ in thousands)	% of Total Expenditures	Number of Projects	% of Total Projects
Department of Health and Human Services:				
National Institutes of Health	192,918+	71	2,367	61
Food and Drug Administration	4,504	2	35	1
Alcohol, Drug Abuse and Mental Health Administration	3,928	1	67	2
Health Resources and Services Administration	298	<1	5	<1
Centers for Disease Control	259	<1	1	<1
Total HHS	201,907	75	2,475	64
U.S. Department of Agriculture	57,064	21	1,043	27
Agency for International Development	5,521	2	18	<1
Veterans Administration	4,631	2	282	7
National Science Foundation	850*	<1	75*	2
Department of Commerce	342	<1	5	<1
Total Federal Expenditures	270,315	100**	3,898*	100**

+ Final figure; previously reported figures may differ
* Estimate
**Total imprecise due to rounding

Table V
FY 1983 EXPENDITURES AND NUMBER OF PROJECTS IN HUMAN NUTRITION RESEARCH, MANPOWER DEVELOPMENT, TRAINING, AND EDUCATION BY FEDERAL AGENCIES

	Expenditures ($ in thousands)	% of Total Expenditures	Number of Projects	% of Total Projects
Department of Health and Human Services:				
National Institutes of Health	164,306	71	2,232	61
Food and Drug Administration	4,210	2	24	<1
Alcohol, Drug Abuse and Mental Health Administration	3,419	1	52	1
Centers for Disease Control	321	<1	4	<1
Health Resources and Services Administration	298	<1	5	<1
Total HHS	172,554	75	2,317	63
U.S. Department of Agriculture (86% on HNRIM)	48,631	21	973	27
Veterans Administration	4,239*	2	283	8
Agency for International Development	4,072	2	11	<1
National Science Foundation	900*	<1	80*	2
Department of Commerce	164	<1	3	<1
Total Federal Expenditures	230,560	100**	3,667	100**

* Estimate
**Total imprecise due to rounding

Table VI
FY 1987 EXPENDITURES BY FEDERAL AGENCIES IN HUMAN NUTRITION RESEARCH, MANPOWER DEVELOPMENT, TRAINING, AND EDUCATION, BY AREA OF SUPPORT
(dollars in thousands)

	Extramural			Intramural			
Agency	Research	Research Manpower Developmt.	Training	Research	Training	Research on Public Information and Education*	Total
AID	4,364						4,364
DOC	96			850			946
DOD	179			354			533
HHS:							
ADAMHA	6,849	774	62			(23)	7,685
CDC				561			561
FDA	755			6,044		(129)	6,799
HRSA	1,147						1,147
NCHS				3,885			3,885
NIH	240,071	2,782	3,899	12,827	1,031	(10,306)	260,610
Total HHS	248,822	3,556	3,961	23,317	1,031	(10,458)	280,687
USDA	33,109			34,492		(708)	67,601
VA				2,021**		(1)**	2,021**
TOTAL	286,570	3,556	3,961	61,034	1,031	(11,167)	356,152

* The dollar amounts in this category are included within the funding mechanisms and the total amount
**Estimate

Table VII
FY 1987 HUMAN NUTRITION RESEARCH AND TRAINING EXPENDITURES
OF FEDERAL AGENCIES BY SUPPORT MECHANISM
(dollars in thousands)

	Extramural						
Agency	Grants	Contracts	Interagency Agreements	Formula Grants	Cooperative Agreements	Intramural	Total
AID	3,347	473			544		4,364
DOC					96	850	946
DOD	161		18			354	533
HHS:							
ADAMHA	7,685						7,685
CDC						561	561
FDA		545	210			6,044	6,799
HRSA	1,147						1,147
NCHS						3,885	3,885
NIH	206,721	17,834	3,865		18,331	13,859	260,610
HHS							
Total	215,553	18,379	4,075		18,331	24,349	280,687
USDA	2,388	17,145		7,866	5,710	34,492	67,601
VA						2,021*	2,021*
TOTAL	221,449	35,997	4,093	7,866	24,681	62,066	356,152

* Estimate

Appendix A

HNRIM CLASSIFICATION SYSTEM

Projects included in the HNRIM system are selected and coded for submission by the sponsoring agency, based upon the classification system following. This classification system has its origins in the definition of human nutrition research developed by the NIH Nutrition Coordinating Committee (NCC) in 1977. The Joint Subcommittee on Human Nutrition Research, operating out of the Office of Science and Technology Policy in the Executive Office of the President, expanded the NIH definition to include the human nutrition research activities supported by participating Federal agencies, and developed a system of 34 data classification categories for human nutrition research. In FY 1985, Code 35, "Parenteral, Enteral, and Elemental Nutrition," was added under Section I, subsection B by the ICHNR, which now oversees operation of the data base.

I. Research in the Biomedical and Behavioral Sciences

A. Research on Normal Nutritional Requirements Throughout the Life Cycle

The following five categories are included because of the importance to health promotion of establishing normal nutritional requirements throughout the life cycle, and the differing needs of individuals at various stages of the life cycle.

Research activities relevant to normal nutrition at specific stages of the human life cycle should be assigned to classifications 1-5.

1. Maternal Nutrition
2. Infant and Child Nutrition (0-12 years)
   (includes the low birth weight infant)
3. Adolescent Nutrition (13-18 years)
4. Adult Nutrition (19-65 years)
5. Nutrition of the Elderly (65+ years)

B. Diseases and Conditions

Research on the role of nutrition in the prevention, amelioration, and treatment of diseases and conditions should be assigned to categories 6-16. Because of the importance of appropriate nutritional support of the patient in the treatment of disease, the category of "parenteral, enteral and elemental nutrition" has been added in this subsection as code 35.

6. Cardiovascular Disease and Nutrition
7. Cancer and Nutrition
8. Other Diseases and Nutrition
   (e.g., osteoporosis, diabetes, etc.)

9. **Trauma (Including Burns) and Nutrition**

10. **Infection--Immunology and Nutrition**

11. **Obesity, Anorexia, and Appetite Control**

12. **Genetics and Nutrition**

13. **Nutrition and Function**
(Includes mental, psychomotor, and work performance; environmental stress)

• 14. **Nutrient Interactions**
(Includes nutrient-nutrient interactions, nutrient-drug interactions, nutrient-toxicant interactions, and nutrient toxicity)

15. **Other Conditions and Nutrition**

• 16. **Nutritional Status**
(Includes research on methods for the determination of nutritional status and surveillance: dietary history and food consumption, biochemical determinants, anthropometry, and clinical examination)

35. **Parenteral, Enteral, and Elemental Nutrition**

C. Nutrient Metabolism and Metabolic Mechanisms at the Cellular and Subcellular Levels

Categories 17-25, 14, and 27 classify research by nutrient variables; these categories should be used to indicate the nutrient variables in research classified elsewhere; and classify biochemical, subcellular, cellular, and animal research, such as studies of nutrient mechanisms and metabolism not related to specific diseases, conditions, or stages of the life cycle.

17. **Carbohydrates**

18. **Lipids (Fats and Oils)**
(Includes essential fatty acids, lipo- and apoproteins)

19. **Alcohols**
(Includes ethanol, sorbitols, and other alcohols used as components in synthetic and semisynthetic foods)

20. **Proteins and Amino Acids**
(Includes essential as well as nonessential amino acids such as taurine and carnitine)

21. **Vitamins**
(Includes vitamin A, C, B6, B12, D, E, K, thiamin, riboflavin, niacin, folacin, biotin, and pantothenic acid)

22. **Minerals and Essential Trace Elements**

(Includes calcium, phosphorus, magnesium, iron, zinc, iodine, copper, manganese, fluoride, chromium, selenium, and molybdenum)

23. Water and Electrolytes
(Includes sodium, potassium, and chloride)

24. Fiber

25. Other Nutrients in Food
(Such as cobalt, nickel, vanadium, silicon, tin, arsenic, cadmium, choline, lecithin and various growth factors)

* 14. Nutrient Interactions
(Includes nutrient-nutrient interactions, nutrient-drug interactions, nutrient-toxicant interactions, and nutrient toxicity)

* 27. Bioavailability of Nutrients
(Includes methods for the determination of bioavailability of nutrients)

II. Research in Food Sciences

Categories 26-29 should be used for research in the nutritional aspects of food sciences.

26. Food Composition
(Includes nutritional quality, nutrient content, and research on methods of analysis for nutrients and fiber)

* 27. Bioavailability of Nutrients
(Includes methods for the determination of bioavailability of nutrients)

28. Effects of Technology on Acceptability and Nutritional Characteristics of Foods and Diets
(Includes the beneficial and adverse effects of varietal and species differences, harvest and post-harvest technology, retail food practices, food processing, handling, preservation, and home cooking)

29. Other Research in Food Sciences

III. Research on Nutrition Monitoring and Surveillance of Populations

30. Food Consumption Surveys
(Includes research on methods for determination of food consumption and its trends, and research utilizing data derived from such surveys)

31. Studies of Dietary Practices, Food Consumption Patterns, and Their Determinants

* 16. Nutritional Status
(Includes research on methods for the determination of nutritional status and surveillance: dietary history and food consumption, biochemical determinants, anthropometry, and clinical examination)

IV. Research in Nutrition Education

Categories 32-33 encompass research in nutrition education.

32. **Studies on Methods for Informing and Educating the Public About Nutrition, Health, and Dietary Practices and for Countering Nutrition Misinformation**
, (Includes studies on methods for informing and educating professionals in these areas)

33. **Other Research in Nutrition Education**

V. Research on the Effects of Government Policy and Socioeconomic Factors on Food Consumption and Human Nutrition

34. **Effects of Government Policy and Socioeconomic Factors on Food Consumption and Human Nutrition**

---

* Codes marked by an asterisk are applicable to more than one class.

Appendix B

Table B-1. DISTRIBUTION* OF HUMAN NUTRITION RESEARCH AND TRAINING PROJECTS BY HNRIM CLASSIFICATION CODE, FY 1987, BY PARTICIPATING HEALTH AND HUMAN SERVICES AGENCY

HNRIM CLASSIFICATION CODE	TOTAL	AGENCIES (NO. PROJECTS)					
		ADAMHA	CDC	FDA	HRSA	NCHS	NIH
01-Maternal Nutrition	151	8	1		3		139
02-Infant & Child Nutr.	297	3	1	4	7	1	281
03-Adolescent Nutrition	64	1		1	2	1	59
04-Adult Nutrition	60	2		1	1	1	55
05-Nutrition of the Elderly	116	2		1	1	1	111
06-Cardiovascular Dis. & Nutr.	458	2		1		3	452
07-Cancer & Nutrition	505			2		1	502
08-Other Diseases & Nutr.	438	2		2		2	432
09-Trauma and Nutrition	23			1			22
10-Infection--Immunol. & Nutr.	102			1	1		100
11-Obesity, Anorexia & Appetite	322	29		3	2		288
12-Genetics and Nutrition	230	8		1	3		218
13-Nutrition and Function	226	30		3	1		192
14-Nutrient Interactions	329	3		4			322
15-Other Conditions & Nutr.	517	2		5			510
16-Nutritional Status	188	1	1	6	3		177
17-Carbohydrates	125	1		1			123
18-Lipids (Fats & Oils)	396	3		2			391
19-Alcohols	58	33					25
20-Proteins & Amino Acids	269	7		3	1		258
21-Vitamins	392	6		3			383
22-Minerals & Trace Elements	281	3		3			275
23-Water & Electrolytes	109			1			108
24-Fiber	25			3			22
25-Other Nutrients in Food	61	6		3			52
26-Food Composition	65			10			55
27-Bioavailability of Nutrients	43			5			38
28-Effects of Technology	22			7			15
29-Other Res. in Food Sciences	28			2			26
30-Food Consumption Surveys	21			5	1		15
31-Dietary Practices & Determin.	182	7		12	2		161
32-Res. on Public Education	41	1		2			38
33-Other Res. in Nutr. Ed.	11			3			8
34-Govt. Policy & Socioeconomics	3			3			
35-Parent., Enteral, Elem. Nutr.	97	4		1			92

* A grant or contract may be assigned to more than one of these classification codes

Appendix B

Table B-2. DISTRIBUTION* OF HUMAN NUTRITION RESEARCH AND TRAINING PROJECTS BY HNRIM CLASSIFICATION CODE, FY 1987, BY PARTICIPATING FEDERAL AGENCY

HNRIM CLASSIFICATION CODE	TOTAL	AGENCIES (NO. PROJ.) AID	HHS	DOC	DOD	USDA	VA
01-Maternal Nutrition	197	2	151			44	
02-Infant & Child Nutr.	351	4	297			50	
03-Adolescent Nutrition	81		64			16	1
04-Adult Nutrition	126		60		3	63	
05-Nutrition of the Elderly	157		116			30	11
06-Cardiovascular Dis. & Nutr.	522		458	2		55	7
07-Cancer & Nutrition	558		505	1		34	18
08-Other Diseases & Nutr.	513	1	438	1		36	37
09-Trauma and Nutrition	28		23			3	2
10-Infection--Immunology & Nutr.	120		102			12	6
11-Obesity, Anorexia & Appetite	358		322			26	10
12-Genetics and Nutrition	239		230			9	
13-Nutrition and Function	348	1	226		4	107	10
14-Nutrient Interactions	455		329			123	3
15-Other Conditions & Nutr.	554		517			32	5
16-Nutritional Status	325	2	188			130	5
17-Carbohydrates	194		125		2	60	7
18-Lipids (Fats & Oils)	554		396	4	1	139	14
19-Alcohols	72		58			3	11
20-Proteins & Amino Acids	378		269			103	6
21-Vitamins	527	4	392			97	34
22-Minerals & Trace Elements	454	3	281			156	14
23-Water & Electrolytes	120		109			11	
24-Fiber	57		25			29	3
25-Other Nutrients in Food	96		61			30	5
26-Food Composition	286		65	4		217	
27-Bioavailability of Nutrients	159	2	43			112	2
28-Effects of Technology	314	2	22	1		288	1
29-Other Res. in Food Sciences	135	1	28			106	
30-Food Consumption Surveys	67		21		1	45	
31-Dietary Practices & Determin.	290	3	182		1	103	1
32-Res. on Public Education	65		41			23	1
33-Other Res. in Nutr. Ed.	26		11			14	1
34-Govt. Policy & Socioeconomics	38	2	3			33	
35-Parent., Enteral, Elem. Nutr.	133		97			1	35

* A grant or contract may be assigned to more than one of these classification codes.

Appendix C

FREQUENCY OF USE OF HNRIM DATA ITEMS FOR INFORMATION RETRIEVAL

The 115 queries of the HNRIM system between October 1, 1986, and September 30, 1987 (FY 1987) show the following frequency of use of the HNRIM data fields:

DATA FIELDS QUERIED

Data Field	Number of times used	
Fiscal Year		47
Sponsoring Agency		34
Group		26
Nutrition Classification Code:		
22-Essential Minerals and Trace Elements	10	
13-Nutrition and Function	5	
16-Research on Nutritional Status	3	
21-Vitamins	3	
31-Research on Dietary Practices, Food Consumption, and Determinants	3	
01-Maternal Nutrition	2	
30-Food Consumption Surveys	2	
02-Infant and Child Nutrition	1	
03-Adolescent Nutrition	1	
04-Adult Nutrition	1	
05-Nutrition of the Elderly	1	
06-Cardiovascular Disease and Nutrition	1	
09-Trauma (Including Burns) and Nutrition	1	
11-Obesity, Anorexia, and Appetite Control	1	
18-Lipids (Fats and Oils)	1	
Number of Searches by Nutrition Class. Code		25*
Project ID number		20
Content of the Narrative		18
Project Title		17
Department		16
All Others		9

* Number of searches by nutrition classification code differs from combined incidences of individual codes because some searches include more than one code.

22-941 (184)